

**MINIMUM REQUIREMENTS FOR
CLOSURE REQUESTS**
Tesoro Station 67090
Former Beacon Station No. 685
9301 Greenback Lane, Orangevale, California
Sacramento County Site No. B363

May 25, 2004
AZ142-017

Prepared for:
Tesoro Environmental Resources Company
3450 S. 344th Way #100
Auburn, WA 98001





May 25, 2004

Susan Erikson, M.S.
County of Sacramento -
Environmental Management Department
8475 Jackson Road, Suite 230
Sacramento, California 95826-3904

RE: Minimum Requirements for Closure Requests
Tesoro Site #67090 (former Beacon #685), LRP Site No. B363
9301 Greenback Lane, Orangevale, California

Dear Ms. Erikson:

Attached is a completed Minimum Requirements for Closure Request form ("Closure Form") for the former Beacon Station No. 685 at 9301 Greenback Lane in Orangevale, California. This form is submitted on behalf of Tesoro Environmental Resources Company ("Tesoro").

Per your request, the attached Closure Form provides supplemental information to the previous document entitled *Case Closure Summary Report* ("Closure Report") dated August 2003. The Closure Report includes a comprehensive summary and evaluation of the remedial activities, soil and groundwater investigations and monitoring data collected at the Site, including rationale for recommending case closure. For your convenience, we have enclosed a copy of the original Closure Report.

In addition to the completed Closure Form, attached are supplemental and modified tables, figures and appendices to the Closure Report. Per your request, tabulated historical groundwater sample analysis data (Appendix F) will be emailed to you in Excel spreadsheet format.

Please feel free to call me at 415/460-1561 if you have any questions.

Sincerely,

A handwritten signature in black ink, appearing to read "JH".

Jeff Hennier, R.G., C.HG.
Principal Hydrogeologist

cc: Catherine Runden, Tesoro
Chuck Miller, USA Petroleum
Brian Kelleher, Kelleher and Associates





LIST OF TABLES, FIGURES AND APPENDICES

TABLES

Table 1	Summary of Well Construction Data
Table 2	Comparison of Site Soil Data to Risk-Based Screening Levels
Table 3	Comparison of Site Groundwater Data to Risk-Based Screening Levels and Drinking Water Standards

FIGURES

Figure 1	Site Vicinity Map
Figure 2	Site Map
Figure 3	Site Map Showing Confirmation Soil Sampling Results
Figure 4	Groundwater Sampling Results – January 21, 2003
Figure 5	Historical Benzene Concentrations in Extraction Wells MW-2 and MW-3
Figure 5a	Historical MTBE Concentrations in Extraction Wells MW-2 and MW-3
Figure 5b	Historical TPHg Concentrations in Extraction Wells MW-2 and MW-3
Figure 6	Historical Benzene Concentrations in Downgradient Well MW-5
Figure 7	Summary of Soil Vapor Extraction System Influent Data
Figure 8	Summary of Groundwater Extraction System Influent Data

APPENDICES

Appendix A	Record Owner of Fee Title
Appendix B	Summary of UST Removal and Soil Stockpile Sample Results (Delta; 1990, 1995)
Appendix C	Summary of Soil Analytical Results (Delta, 1995)
Appendix D	Geologic Cross Sections (Delta, 1995)
Appendix E	Summary of Historical Groundwater Level Measurements and Selected Groundwater Elevation Contour Maps (RDM, 2003; Delta, 1995)
Appendix F	Summary of Historical Groundwater Analytical Results (RDM, 2003; Delta, 1990)
Appendix G	Remedial System Diagrams (Delta, 1995)
Appendix H	Summary of Environmental Screening Level Physio-Chemical and Toxicity Constants (RWQCB, 2003)





Case Chronology

Tesoro Site #67090 (former Beacon #685), LRP Site No. B363
9301 Greenback Lane, Orangevale, California

- 1988 – Soil vapor survey conducted; one soil boring drilled (SB-1).
- 1989 – Three monitoring wells (MW-1 through MW-3) and three vapor extraction wells (VEW-1 through VEW-3) installed.
- 1990 – Three gasoline USTs and one waste oil UST removed; soil samples collected from beneath USTs, piping and fuel islands; 3 monitoring wells (MW-4 through MW-6) installed.
- 1991 – Soil vapor extraction system (SVE) and groundwater extraction and treatment system (GWET) startups; two monitoring wells (MW-7 and MW-8) installed.
- 1992 – SVE system shut down; confirmation soil samples collected from four borings (SCB-1 through SCB-4).
- 1994 – GWET system shut down.
- 1997 – Groundwater samples collected from two off-site hydropunch borings (HP-1 and HP-2).
- 1999 – Two off-site wells installed (MW-9 and MW-10).
- Quarterly ground-water monitoring conducted July 1989 through January 2003.



MINIMUM REQUIREMENTS FOR CLOSURE REQUESTS

Tesoro Station 67090, Former Beacon Station No. 685
9301 Greenback Lane, Orangevale, California
Sacramento County Site No. B363

The Sacramento County Environmental Management Department - Hazardous Materials Division recognizes that all of the following requirements might not be applicable for every site. However, the rationale for why the requirements are not appropriate needs to be provided.

CV-RWQCB APPENDIX B CHECKLIST

1. *For groundwater-impacted sites, distance to production wells for municipal, domestic, agriculture, industry and other uses within 2,000 feet of the site;*

The results of a well survey identified the nearest water supply well located approximately 1,400 feet east (i.e., upgradient to crossgradient) of the Site (see Section 6.1 of Case Closure Summary Report).

2. *Site maps, to scale, of area impacted showing locations of former and existing tank systems, excavation contours and sample locations, borings and monitoring well elevation contours, gradients, and nearby surface waters, buildings, streets, and subsurface utilities;*

See attached Figures 1 through 4, Appendix D figures, Appendix E figures and Appendix G figures.

3. *Figures depicting lithology (cross sections), treatment system diagrams;*

Geologic cross sections are included in the attached Appendix D; Appendix G includes treatment system diagrams.

4. *Stockpiled soil remaining on-site or off-site disposal (quantity);*

No stockpiled soil remains on-site and approximately 650 cubic yards of excavated soil was removed and transported to Anderson Landfill in Shasta County, California (see Section 5.1 of Case Closure Summary Report).

5. *Monitoring wells remaining on-site, fate;*

Monitoring wells MW-1 through MW-10 were installed at the Site and will be properly decommissioned following case closure.



6. *Tabulated data of all groundwater elevations and depth to water;*

A historical summary of water level measurements and elevations is provided in the attached Appendix E; selected historical water table elevation contour maps from previous quarterly monitoring reports submitted for the Site are also included in Appendix E.

7. *Tabulated results of all sampling and analysis;*

- *Detection limits for confirmation sampling*
- *Lead analyses*

Results of the excavation pit and piping trench soil sample analyses are summarized in Appendix B. Results of soil investigations and confirmation sampling are summarized in Appendix C. Tabulated historical groundwater sample analysis data are presented in Appendix F and are included in the Excel spreadsheet emailed to Susan Erikson of SCEMD.

8. *Concentration contours of contaminants found and those remaining in soil and groundwater, both on- and off-site;*

- *Lateral extent of soil contamination*
- *Vertical extent of soil contamination*
- *Lateral extent of groundwater contamination*
- *Vertical extent of groundwater contamination*

The lateral extent of petroleum hydrocarbons in soil is illustrated in Figure 3. The lateral extent of petroleum hydrocarbons in groundwater is illustrated in Figure 4. The vertical extent of petroleum hydrocarbons in soil and groundwater are illustrated in the geologic cross sections included in Appendix D.

9. *Zone of influence calculated and assumptions used for the subsurface remediation system and the zone of capture attained for the soil and groundwater remediation systems;*

A groundwater extraction and treatment system (GWETS) was operated between February 1991 and April 1994 (Delta, 1995). Approximately 3,600,000 gallons of groundwater were reportedly extracted for treatment from wells MW-2 and MW-3 (RTD, 1995). The estimated extent of the hydraulic capture zone for the GWETS was approximately 30 feet in the direction parallel to the groundwater gradient direction and approximately 190 feet perpendicular to the gradient direction (see Figure 8 in Appendix G; Delta, 1990). The actual extent of hydraulic capture appeared greater than the estimated extend based on groundwater level measurements collected from monitoring wells during the period of GWETS operation. The estimated extent of hydraulic capture was approximately 150 feet in the downgradient direction based on groundwater level measurements on May 28, 1991 (see Figure 4, Appendix E).



Delta operated a soil vapor extraction and treatment system (SVETS) between February 1991 and April 1992, with soil vapor extraction from piping installed in the backfilled UST excavations and from wells VE-3, MW-2 and MW-3 (Appendix G; Delta, 1995). The design airflow rate through the SVETS was 350 scfm; typical zone of influence estimates for soil vapor extraction wells installed in silty sand/sand vadose-zone sediments range from approximately 10- to 30-foot radius.

10. Reports/information;

- *Unauthorized Release Report*
- *Quarterly monitoring reports*
- *Problem Assessment Report*
- *Final Remediation Plan*
- *Well and borings logs*
- *Other*

The above reports are on file at the SCEMD. A partial listing of reports filed for the Site is provided in Section 9.0 of the Case Closure Summary Report.

11. Best Available Technology (BAT) used or an explanation for not using BAT;

BATs used for remediation of Site soil and groundwater included soil vapor and groundwater extraction and treatment systems (see Section 5.0 of Case Closure Summary Report).

12. Reasons why background was/is unattainable using BAT;

Operation of BATs at the Site were discontinued as a result of declining influent petroleum hydrocarbon concentrations and sampling results indicating petroleum hydrocarbons in soil and groundwater were below target cleanup goals. Background (i.e., below non-detect) levels will eventually be attained as a result of ongoing biodegradation and other natural attenuation processes.

13. Mass balance calculation of the substance treated versus that remaining;

An estimated 3,500 gallons of gasoline were removed from the subsurface by the SVETS, 200 gallons removed by soil excavation and 2.6 gallons were estimated removed by the GWETS (RTD, 1995). Based on calculated volumes of vapor phase and dissolved phase hydrocarbons extracted from the subsurface, RTD estimated that 99.97 percent of the hydrocarbon mass released to the subsurface was removed (RTD, 1995) and Delta estimated that 0.42-gallons of gasoline remained in the soil matrix and groundwater following termination of the remedial system operations (Delta, 1995).

14. Assumptions, parameters, calculations and model used in risk assessments, and fate and transport modeling;

Confirmation sampling results indicated petroleum hydrocarbons were not detected in 11 of 12



soil samples, and the highest concentrations remaining in groundwater were slightly higher than drinking water standards (see Tables 2 and 3). Soil and groundwater screening level risk assessments for potential inhalation, groundwater protection and groundwater ingestion exposure pathways were conducted using applicable risk-based screening level guidance provided by RWQCB-San Francisco Bay Region, Tier 1 Risk Based Screening Levels (RWQCB, 2001).

Assumptions include the following risk exposure pathways are not complete: incidental ingestion of soil; inhalation of fugitive dusts; and dermal contact to soil. Ingestion of drinking water from the Site is also not considered to be a complete exposure pathway because no sensitive receptors were identified in the Site vicinity (see Section 6.1). Though no plans are known to exist, future Site land use could potentially include Site redevelopment and construction of residential and/or commercial buildings. Because the Site could eventually be redeveloped for residential use, residential receptor exposure scenarios were evaluated in addition to the current commercial/industrial land use scenario.

Additional assumptions, parameters and calculations of the screening level assessment are described below under #11.

15. Rationale why conditions remaining at the site will not adversely impact groundwater quality, health, or other beneficial uses; and

No sensitive receptors were identified in the Site vicinity based on the sensitive receptor survey (see Section 6.1) and no potential health risk concerns or future threat to further groundwater degradation were identified based on the screening level risk assessment (see Section 7.0).

16. Waste Extraction Test (WET) or TCLP results.

Soil samples collected from the UST excavation and stockpiled soils were reportedly analyzed for total lead and other metals by the WET method (Delta, 1990). Sample results are included in Appendix B. No TCLP sample analysis results are available for Site soil.

ADDITIONAL INFORMATION REQUIRED FOR CLOSURE:

1. A listing of all tanks at the site, their sizes, contents, when they were removed and when and where they were disposed of;

USTs removed from the Site consist of the following: one 250-gallon capacity waste oil UST; one 4,000-gallon capacity gasoline UST; and two 10,000-gallon capacity gasoline USTs.

The USTs, associated piping and dispensers were removed from the Site in May and June 1990 (Delta, 1990). The USTs were removed by Fillner Construction, Inc. under the oversight of Delta Environmental (Delta, 1990). The USTs were transported to H&H Ship Service Company in San Francisco for metal salvaging (Delta, 1990).



2. *A listing of all piping at the site, the quantity of piping in lineal feet, when it was removed and when and where it was disposed of;*

An estimated 150 lineal feet of dispenser piping was removed and reportedly disposed with the USTs at H&H Ship Service Company in San Francisco.

3. *A listing of quantities of excavated soil, purge water, soil cuttings, and barrels and when and where they were disposed of;*

An estimated 650 cubic yards of excavated soil was removed and disposed at Anderson Landfill in Shasta County, California. Purge water from groundwater sampling activities was temporarily stored in drums and properly disposed. The total volume of purge water removed from the Site is unknown.

4. *Greatest and least depths to groundwater below ground surface;*

Historical monitoring data indicate the depth to groundwater measured in well MW-1 varied between a high of 40.56-feet bgs (June 1994) and low of 50.71-feet bgs (January 2003) (Appendix E).

5. *If monitoring wells were installed and no contamination was found in the monitoring wells, the estimated transit time for contamination to leach to groundwater and reach the closest downgradient monitoring well;*

The stated condition does not apply because petroleum hydrocarbons were detected in Site monitoring wells.

6. *If a vapor extraction system was used;*

- a. *plan views showing the radius of influence of each vapor extraction well.*
- b. *graphs showing the decline in influent concentrations vs. time showing system reached asymptotic concentrations - if system was pulsed, graphs must include peaks if there were any.*
- c. *date when system ceased to operate*
- d. *plan views showing the lateral extent of remaining contamination*
- e. *cross-sections showing vertical extent of remaining soil contamination.*

The estimated SVETS zone of influence and lateral extent of petroleum hydrocarbons in soil are illustrated in Figure 3. The vertical extent of petroleum hydrocarbons in soil is illustrated in the geologic cross sections included in Appendix D. Operation of the SVETS was discontinued in April 1992 as a result of declining influent petroleum hydrocarbon concentrations illustrated in Figure 7.

7. *If groundwater extraction was used;*

- a. *plan views showing the original groundwater contamination plume, and the*



- remaining plume;*
- b. *plan views showing the radius of influence of each groundwater extraction well;*
 - c. *graphs showing the decline in concentrations vs. time for each monitoring well;*
 - d. *an estimate of when remaining contamination concentrations (if there is any) will reach Water Quality Objectives by passive bioremediation i.e. Primary MCL for Benzene, Taste and Odor Thresholds for TPHg, TPHd, and Toluene, Ethylbenzene, and Xylenes;*
 - e. *date when system ceased to operate.*

The estimated GWETS zone of influence and lateral extent of petroleum hydrocarbons in groundwater prior to and after operation of the GWETS are illustrated in Figure 4. The vertical extent of petroleum hydrocarbons in groundwater is illustrated in the geologic cross sections included in Appendix D. Operation of the GWETS was discontinued in April 1994 as a result of declining influent petroleum hydrocarbon concentrations illustrated in Figure 8, and declining concentrations in extraction wells MW-2 and MW-3 (Figures 5, 5a, 5b). Concentrations of benzene and MTBE at well MW-3 are expected to decline below MCLs within 1 to 3 years and eventually attain background levels as a result of biodegradation and other natural attenuation processes (Figures 5, 5a).

8. *If passive bioremediation is to be used to remediate remaining contamination or was the only remedial action:*
- a. *plan views showing the original groundwater contamination plume, and the remaining plume;*
 - b. *graphs showing the decline in concentrations vs. time for each monitoring well;*
 - c. *an estimate of when remaining contamination concentrations (if there are any) will reach Water Quality Objectives by passive bioremediation i.e. Primary MCL for Benzene, Taste and Odor Thresholds for TPHg, TPHd, and Toluene, Ethylbenzene, and Xylenes;*

The estimated lateral extent of petroleum hydrocarbons in groundwater prior to and after operation of the GWETS are illustrated in Figure 4. Petroleum hydrocarbon concentrations in extraction wells MW-2 and MW-3 are illustrated in Figures 5, 5a and 5b, and in downgradient well MW-5 are illustrated in Figure 6. Concentrations of benzene and MTBE at well MW-3 are expected to decline below MCLs within 1 to 3 years and eventually attain background levels as a result of biodegradation and other natural attenuation processes (Figures 5, 5a).

9. *If contamination remains in the soil, and if there were no monitoring wells installed, fate and transport modeling to determine if groundwater will be impacted, and by what maximum concentration. The input sheet shall be included with the fate and transport output sheets.*

A screening level risk assessment for potential inhalation risks posed by residual petroleum hydrocarbons in soil and groundwater was conducted using applicable risk-based screening levels provided by RWQCB-San Francisco Bay Region, Tier I Risk Based Screening Levels (RBSLs). Current RWQCB screening levels are identified as Environmental Screening Levels (ESLs) in the document entitled *Screening For Environmental Concerns at Sites With Contaminated ESLs* dated July 2003 (updated February 2004). Summaries of potential exposure pathways, receptor scenarios, petroleum hydrocarbon concentrations in Site soil and groundwater, and applicable RBSLs/ESLs are summarized in Tables 2 and 3, respectively. Input parameters to the RBSLs/ESLs are provided by the RWQCB-San Francisco Bay Region and are summarized in the attached Appendix H. An electronic version of the RWQCB document can be accessed at www.swrcb.ca.gov/trwqcb2/esl.htm.

The following pages of the GSI ASTM RBCA, if used, shall be submitted:

10. An estimate of the amount (in pounds or gallons) of contamination remaining in the soil and/or in the dissolved phase may be substituted for a mass balance.
Based on calculated volumes of vapor phase and dissolved phase hydrocarbons extracted from the subsurface, RTD estimated that 99.97 percent of the hydrocarbon mass released to the subsurface was removed (RTD, 1995) and Delta estimated that 0.42-gallons of gasoline remained in the soil matrix and groundwater following termination of the remedial system operations (Delta, 1995).

11. Human-health based risk assessment - all input and output sheets must be submitted, including the risk calculations. If the GSI/ASTM RBCA is used, the following pathways must be evaluated - soil volatilizing to indoor and outdoor air, groundwater volatilization to indoor and outdoor air, soil leaching to groundwater, in addition, if the 95% UCL is not used, justification must be submitted for using a lower UCL.

The stated condition does not apply because monitoring wells were installed at the Site.

12. *Stratigraphic cross-sections shall depict: a) location and screened intervals of wells; and/or b) verification/confirmation borings with sample locations and concentrations.*

Location and screen intervals of selected monitoring wells and sampling results from confirmation borings SCB-1 through SCB-4 are illustrated in the geologic cross sections included in Appendix D.

13. *Please note that if verification/confirmation borings were not advanced, the original data must be depicted on the cross-sections.*

Confirmation soil sampling was conducted at borings SCB-1 through SCB-4 in January 1992. Sampling results from confirmation borings and soil borings sampled prior to soil remediation are illustrated in the geologic cross sections included in Appendix D.

14. *Certified Fee Title holder notification – this must be submitted prior to the closure request being submitted. A copy of the letter notifying the fee titleholder(s) and a copy of the certified receipt must be sent to this office. Where the RP is the sole owner, a letter indicating this must be submitted to this office.*

See copy of letter in Appendix A.

LOW RISK SOIL- ONLY CRITERIA

1. *The release has been stopped and sources, including free product, have been removed or remediated:*

USTs were replaced in 1990 and impacted soil was excavated and remediated using soil vapor extraction and treatment (see Section 5.0 of Case Closure Summary Report).

2. *The site has been adequately characterized:*

The lateral and vertical extent of petroleum hydrocarbons in soil was characterized and is illustrated in Figure 3 and Appendix D, respectively (see Section 3.0 of Case Closure Summary Report).

3. *No water supply wells, deeper drinking water aquifers, surface water, or other sensitive receptors are likely to be impacted:*

No sensitive receptors were identified in the Site vicinity based on the sensitive receptor survey (see Section 6.0 of Case Closure Summary Report).

4. *The site presents no significant risk to human health or safety.*

No potential health risk concerns or future threat to further groundwater degradation were identified based on the screening level risk assessment (see Section 7.0 of Case Closure Summary Report).



LOW RISK GROUNDWATER CRITERIA

1. *The release has been stopped and sources, including free product, have been removed or remediated:*

USTs were replaced in 1990 and petroleum hydrocarbon-impacted groundwater was remediated using groundwater extraction and treatment (see Section 5.0 of Case Closure Summary Report).

2. *The site has been adequately characterized:*

The lateral and vertical extent of petroleum hydrocarbons in groundwater was characterized and is illustrated in Figure 4 and Appendix D, respectively (See Section 3.0 of Case Closure Summary Report).

3. *The contaminant plume is not migrating and chemical concentrations in groundwater are projected to meet water quality objectives through natural attenuation or engineered solutions prior to beneficial use of groundwater:*

The petroleum hydrocarbons plume in groundwater is shrinking (Figure 4) and concentrations of benzene and MTBE at well MW-3 are expected to decline below MCLs within 1 to 3 years and eventually attain background levels as a result of biodegradation and other natural attenuation processes (Figures 5, 5a).

4. *No water supply wells, no deeper drinking water aquifers, surface water, or other sensitive receptors are likely to be impacted:*

No sensitive receptors were identified in the Site vicinity based on the sensitive receptor survey (see Section 6.0 of Case Closure Summary Report).

5. *The site presents no significant risk to human health or safety.*

No potential health risk concerns or future threat to further groundwater degradation were identified based on the screening level risk assessment (see Section 7.0 of Case Closure Summary Report).



TABLE 1
SUMMARY OF MONITORING WELL CONSTRUCTION DATA
9301 Greenback Lane, Orangevale

	Well Number			
	MW-1	MW-2	MW-3	MW-4
Date of Well Completion	Jul-89	Jul-89	Jul-89	Feb-90
Top of Casing Elevation (ft MSL)	273.00	269.64	269.03	269.79
Casing Diameter (in.)	4	4	4	2
Total Well Depth (ft.)	60	60	60	60
Slotted Casing Depth Interval (ft)	40 - 60	40 - 60	40 - 60	40 - 60
Filter Pack Depth Interval (ft)	38 - 60	38 - 60	38 - 60	38 - 60
Bentonite Seal Depth Interval (ft)	36 - 38	36 - 38	36 - 38	36 - 38
Grout Depth Interval (ft)	0 - 36	0 - 36	0 - 36	0 - 36
Casing Type	Sched 40 PVC	Sched 40 PVC	Sched 40 PVC	Sched 40 PVC
Slot Type	0.010 - inch	0.010 - inch	0.010 - inch	0.010 - inch
Filter Pack Type	No. 3 sand	No. 3 sand	No. 3 sand	No. 3 sand

	Well Number			
	MW-6	MW-7	MW-8	MW-9
Date of Well Completion	Feb-90	May-90	May-90	Apr-99
Top of Casing Elevation (ft MSL)	271.25	261.66	266.02	267.07
Casing Diameter (in.)	2	2	2	2
Total Well Depth (ft.)	60	60	60	55
Slotted Casing Depth Interval (ft)	40 - 60	40 - 60	40 - 60	39.5 - 55
Filter Pack Depth Interval (ft)	38 - 60	38 - 60	36 - 60	38 - 55
Bentonite Seal Depth Interval (ft)	36 - 38	34 - 38	32 - 36	35.5 - 38
Grout Depth Interval (ft)	0 - 36	0 - 34	0 - 32	0 - 35.5
Casing Type	Sched 40 PVC	Sched 40 PVC	Sched 40 PVC	Sched 40 PVC
Slot Type	0.010 - inch	0.010 - inch	0.020 - inch	0.020 - inch
Filter Pack Type	No. 3 sand	No. 3 sand	No. 3 sand	No. 3 sand

NOTES: ft MSL - feet above mean sea level

TABLE 2
COMPARISON OF SITE SOIL DATA TO RISK-BASED SCREENING LEVELS
9301 Greenback Lane, Orangevale

Exposure Pathway	Receptor Scenario	Soil Sample Concentrations (maximum)					RWQCB Tier 1 RBSLs - Indoor Air Impacts and Groundwater Protection				
		Benzene**	Toluene**	Ethylbenzene**	Xylenes**	TPHg*	Benzene	Toluene	Ethylbenzene	Xylenes	TPHg
Soil-vapor intrusion from soil to buildings	Potential Residential	0.006	0.005	0.01	0.034	<1	0.18	30	76	210	NA
	Potential Commercial	0.006	0.005	0.01	0.034	<1	0.39	89	220	210	NA
Soil leaching (ground water protection)	Incomplete Residential	0.006	0.005	0.01	0.034	<1	0.045	2.6	2.5	1	100

Notes:

All concentrations in mg/kg

* - TPHg not detected in soil confirmation samples.

** - BTEX compounds detected in 1 of 12 soil samples.

NA = not applicable

RBSL - Risk Based Screening Level

Benzene cancer risk based on 1 excess cancer in exposed population of 1,000,000 (Residential) or 100,000 (Commercial)

TABLE 3
COMPARISON OF SITE GROUND-WATER DATA TO RISK-BASED SCREENING LEVELS
AND DRINKING WATER STANDARDS
9301 Greenback Lane, Orangevale

Exposure Pathway	Receptor Scenario	Site Ground-Water Concentrations - (maximum)			RWQCB Tier 1 RBSLs - Indoor Air Impacts**			RWQCB Tier 1 RBSLs/MCLs - Drinking Water			
		Benzene	MTBE	TPHg	Benzene	MTBE	TPHg	Benzene	MTBE	TPHg	
Ground water-vapor intrusion from ground water to buildings	Potential Residential	13	5.9	280	84	50,000	NA	NA	NA	NA	
	Potential Commercial	13	5.9	280	350	210,000	NA	NA	NA	NA	
Ground water ingestion	Incomplete*	Residential	13	5.9	280	NA	NA	NA	1	5	100

Notes:

All concentrations in parts per billion (ppb or ug/l)

Site concentrations represent maximum concentrations detected in most recent groundwater samples (Appendix F).

NA = not applicable

* - Incomplete exposure pathway (see Section 6.0).

** - Value based on coarse-grained soils (RWQCB, 2001).

RBSL - Risk Based Screening Level

Benzene cancer risk based on 1 excess cancer in exposed population of 1,000,000 (Residential) or 100,000 (Commercial)

MCLs - Maximum Contaminant Levels; Table presents lowest numerical value from EPA and State of CA primary and secondary MCL standards.

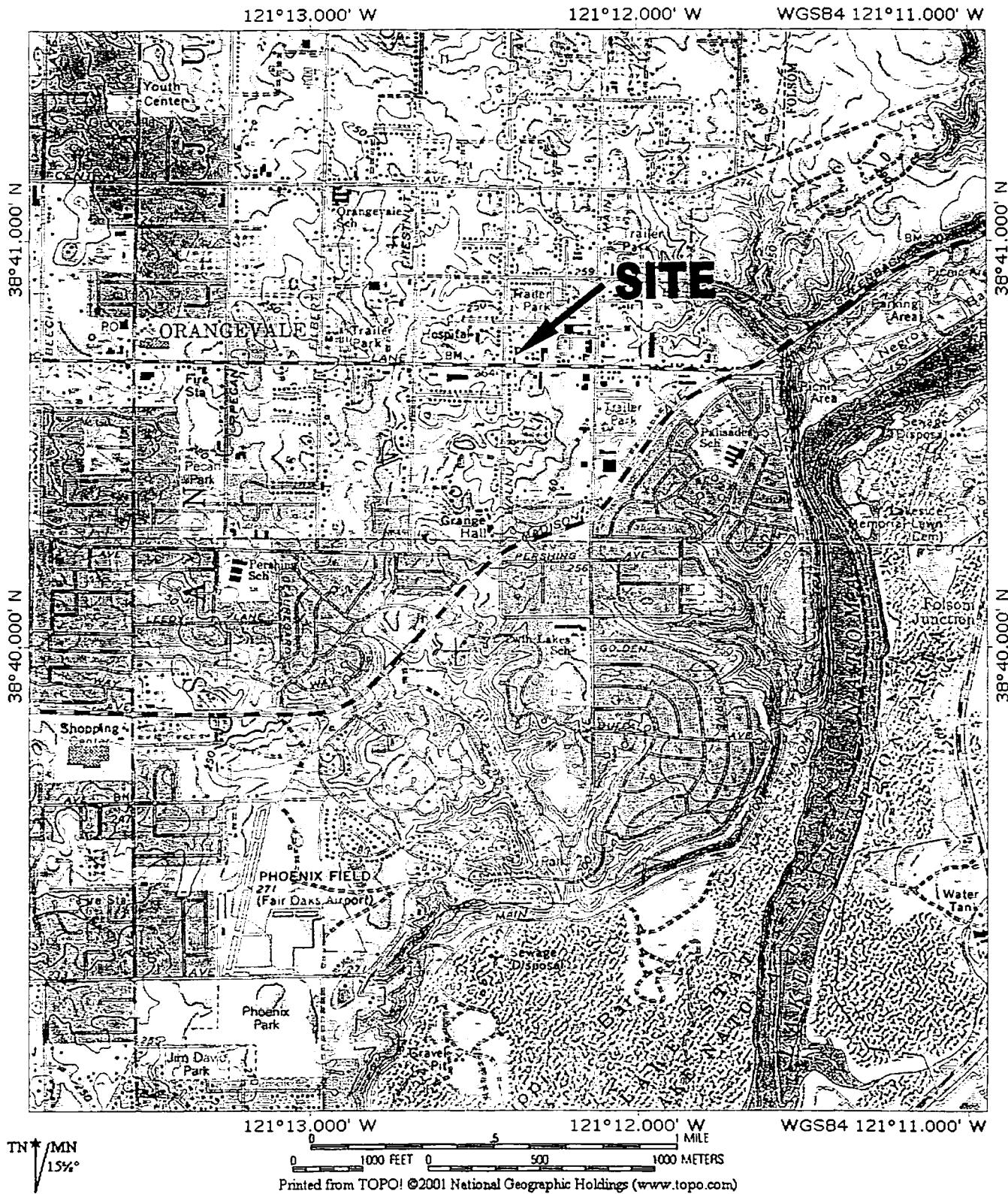
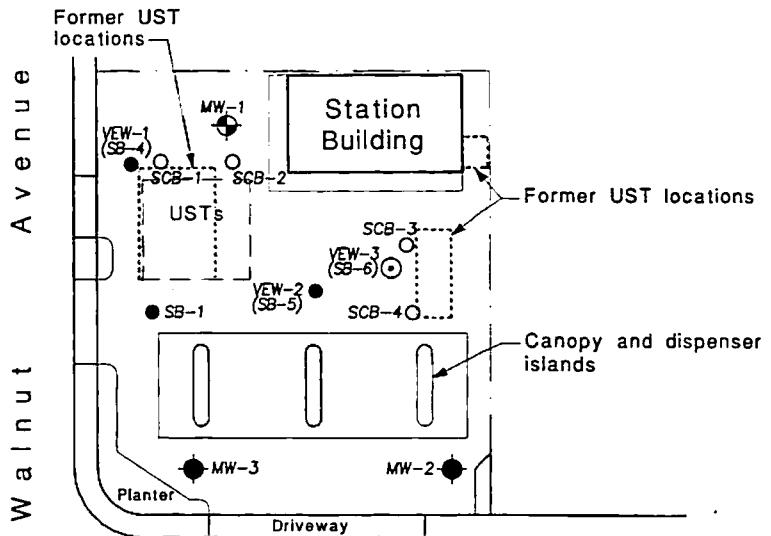
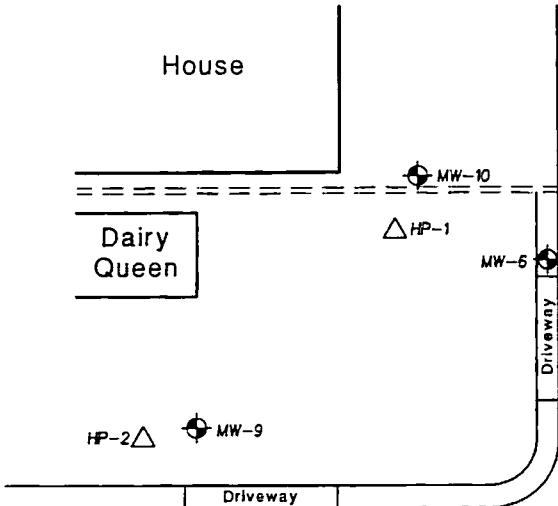
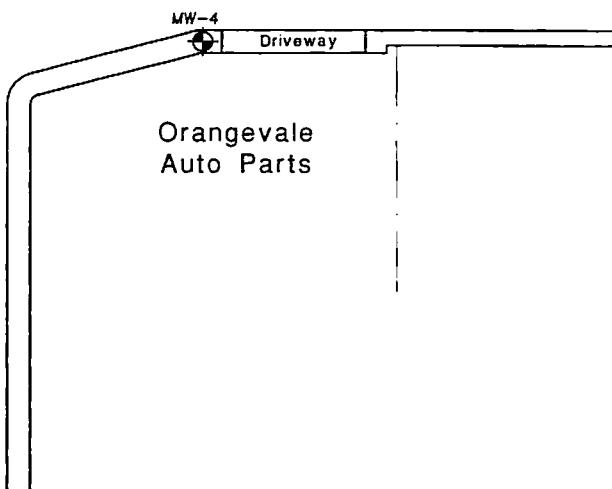
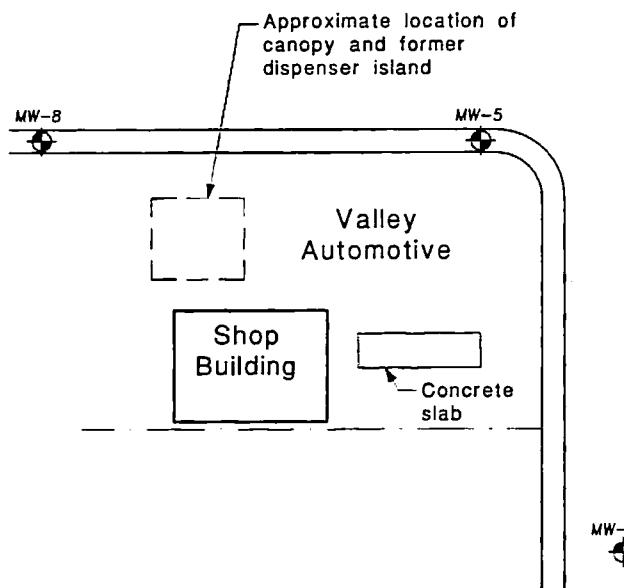


Figure 1: Site Vicinity Map



Greenback Lane



MAP SOURCE:
RDM Environmental, 4/8/02

EXPLANATION

- Ground-water monitoring well location
- Former vapor extraction well location

- Former ground-water extraction well location
- Soil boring location
- Soil confirmation boring location

△ Hydro-punch groundwater sample location

0

50'



Figure 2: Site Map

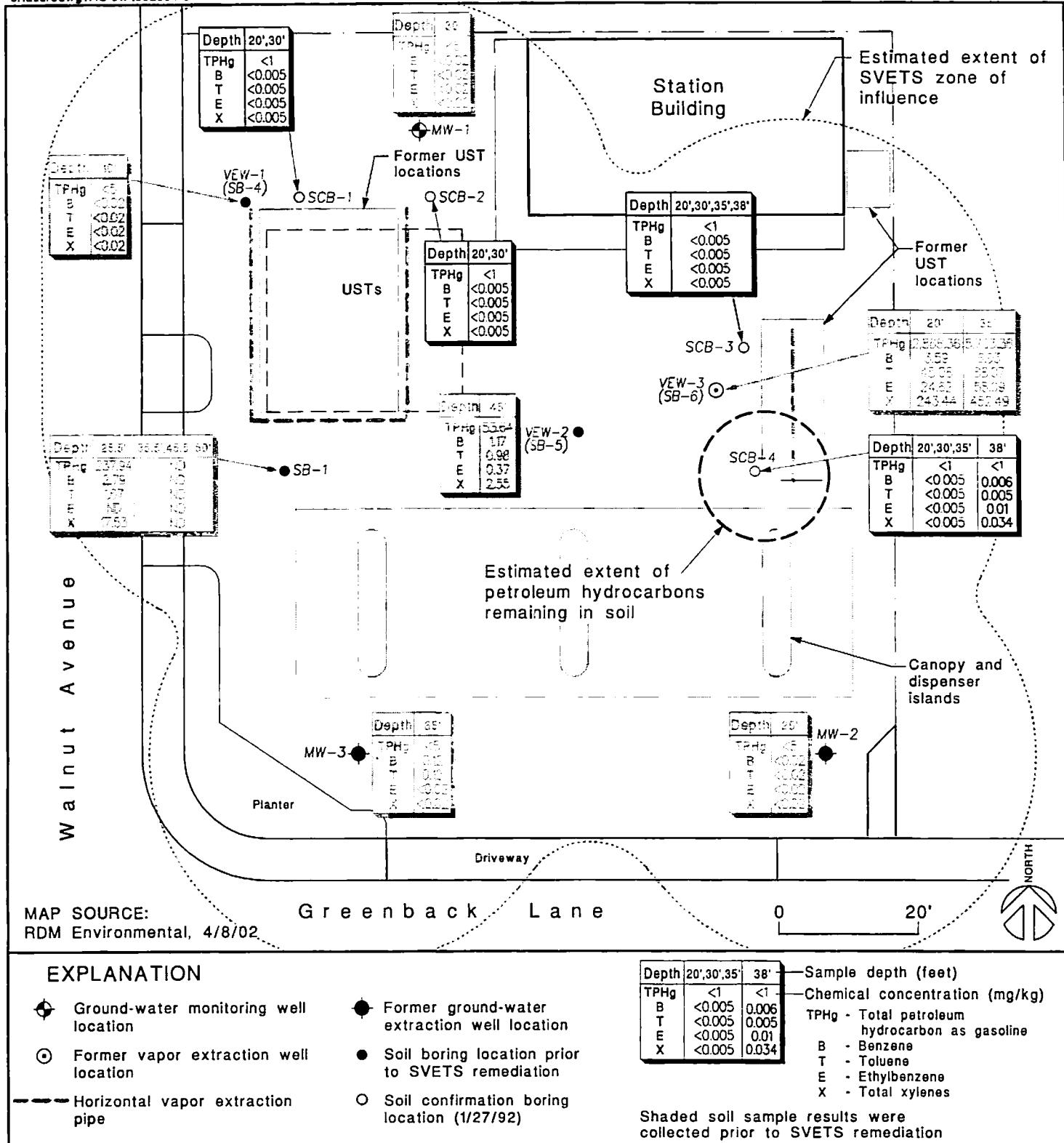


Figure 3: Site Map Showing Confirmation Soil Sampling Results

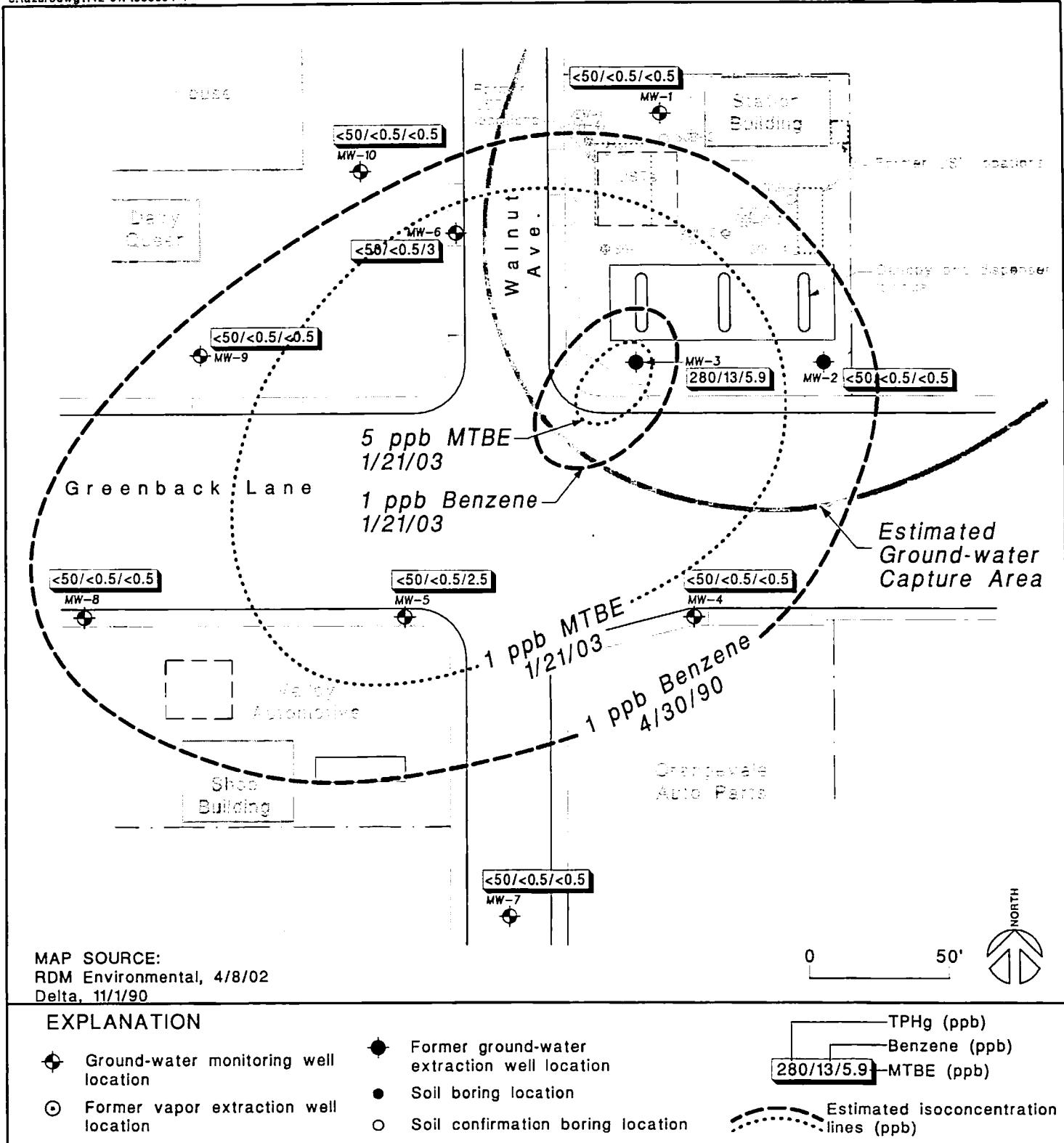


Figure 4: Groundwater Sampling Results - January 21, 2003

Figure 5: Historical Benzene Concentrations in Extraction Wells MW-2 and MW-3
 9301 Greenback Lane, Orangevale, CA (Site #67090)

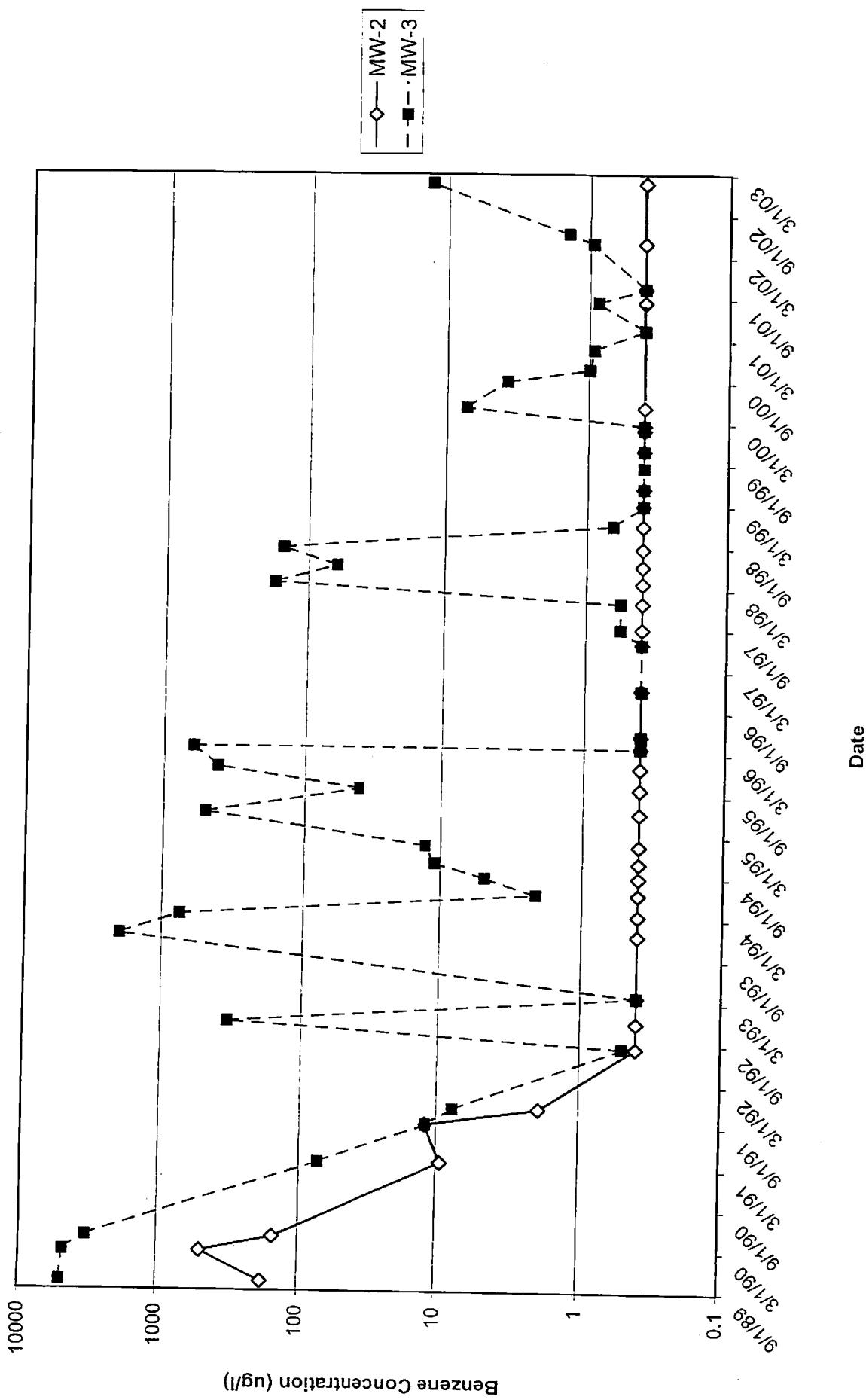


Figure 5a: Historical MTBE Concentrations in Extraction Wells MW-2 and MW-3
9301 Greenback Lane, Orangevale, CA (Site #67090)

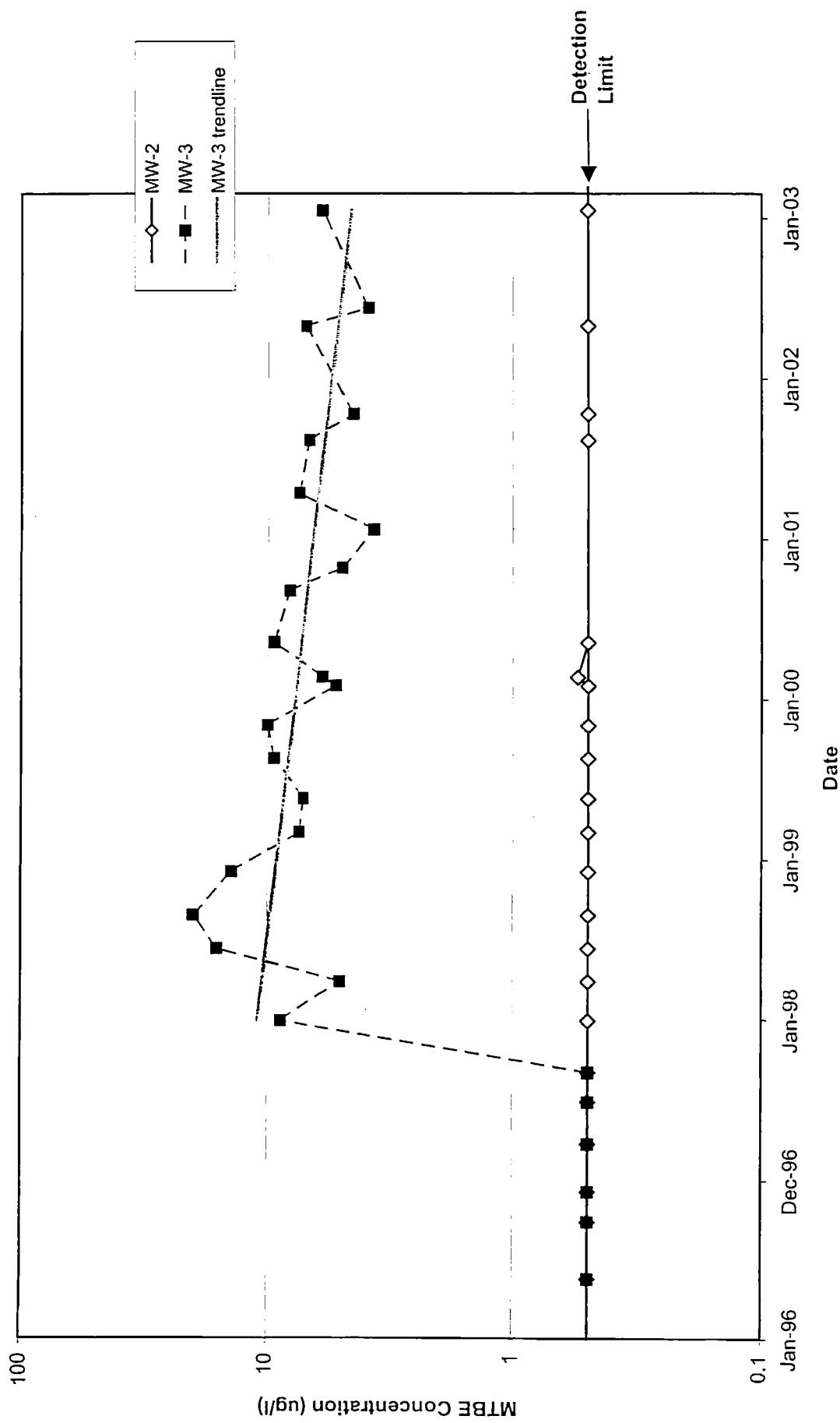
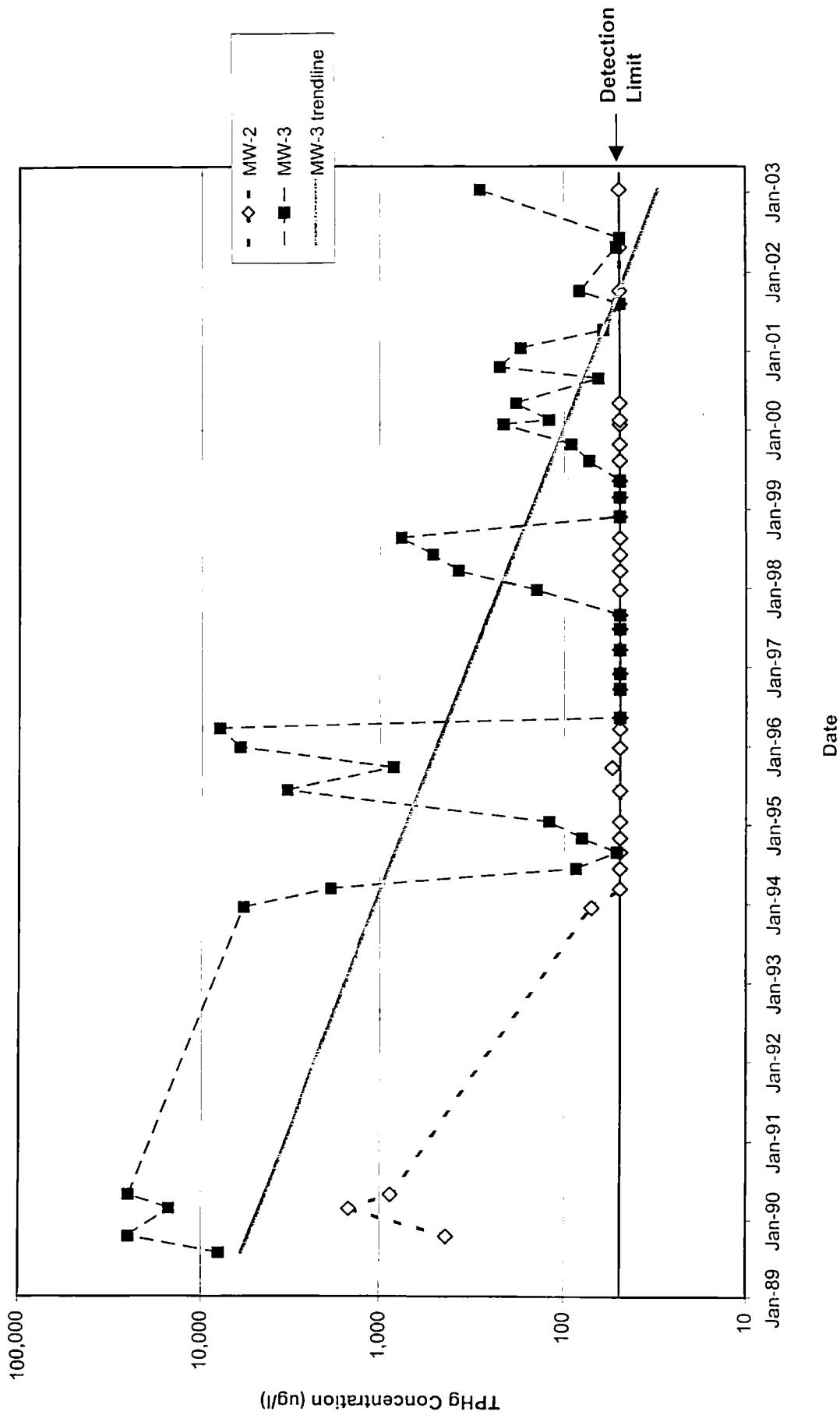


Figure 5b: Historical TPHg Concentrations in Extraction Wells MW-2 and MW-3
9301 Greenback Lane, Orangevale, CA (Site #67090)



**Figure 6: Historical Benzene Concentrations in Downgradient Well MW-5
9301 Greenback Lane, Orangevale, CA (Site #67090)**

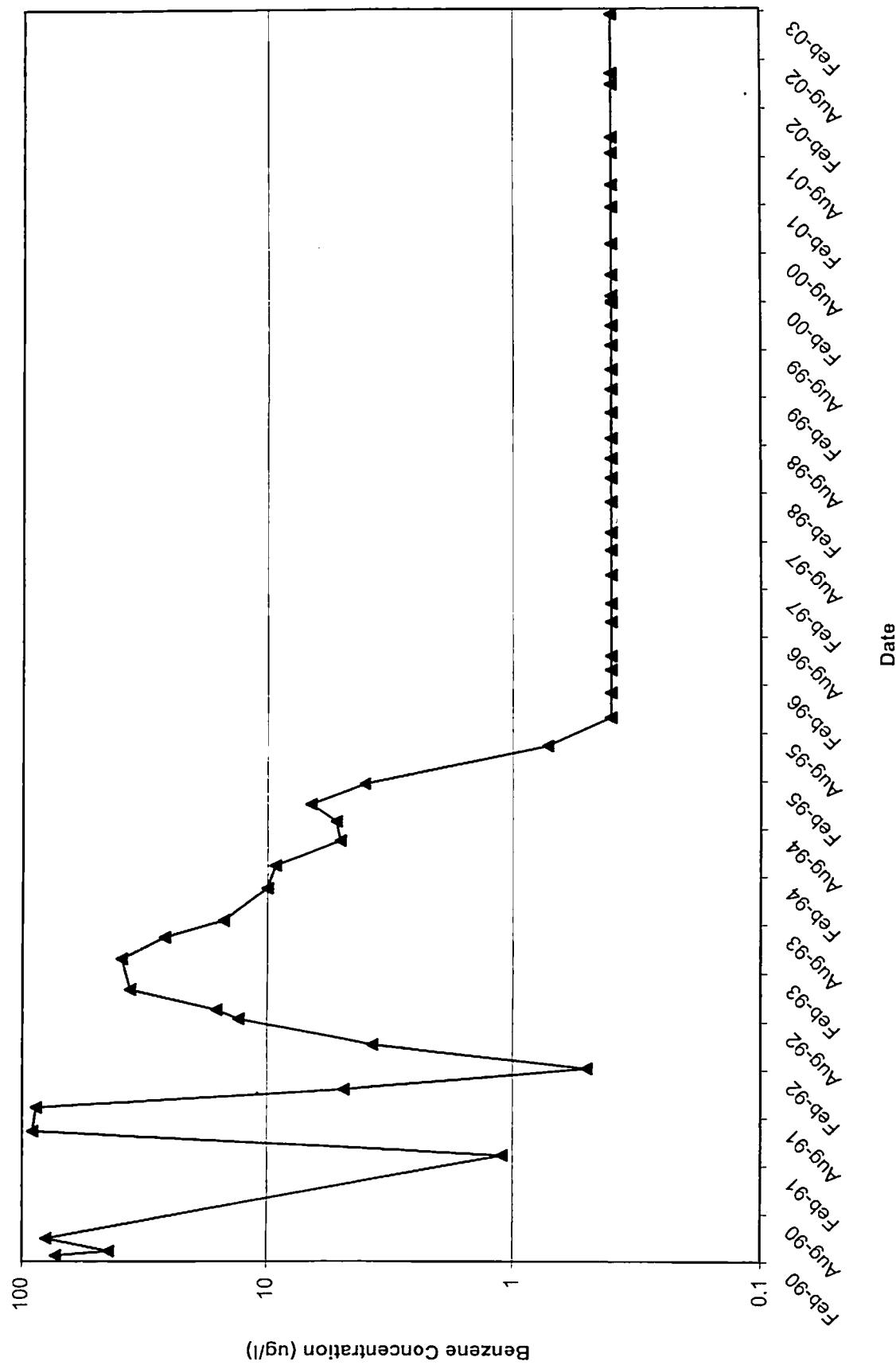


Figure 7: Summary of Soil Vapor Extraction System Influent Data
9301 Greenback Lane, Orangevale, CA (Site #67090)

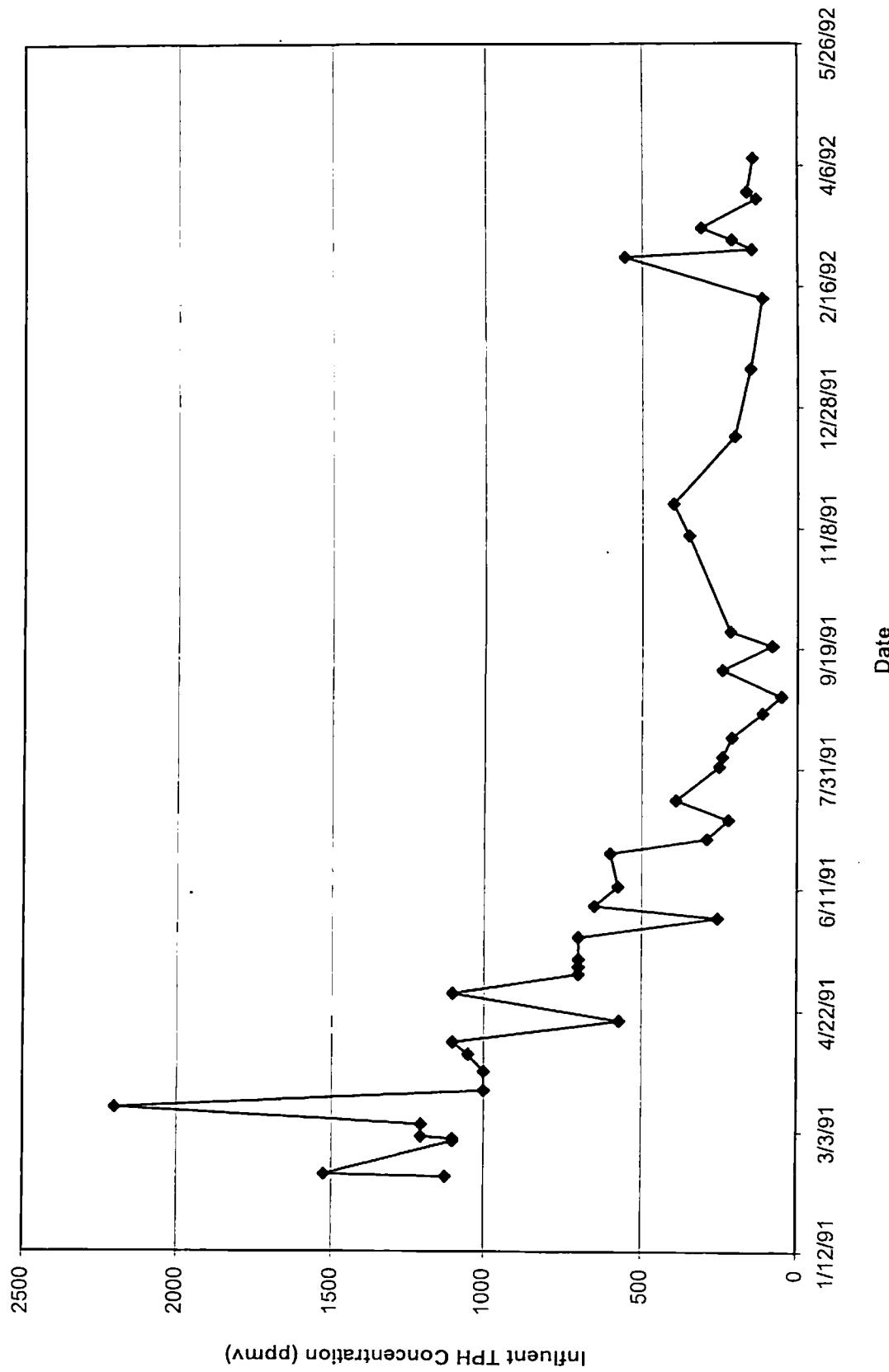
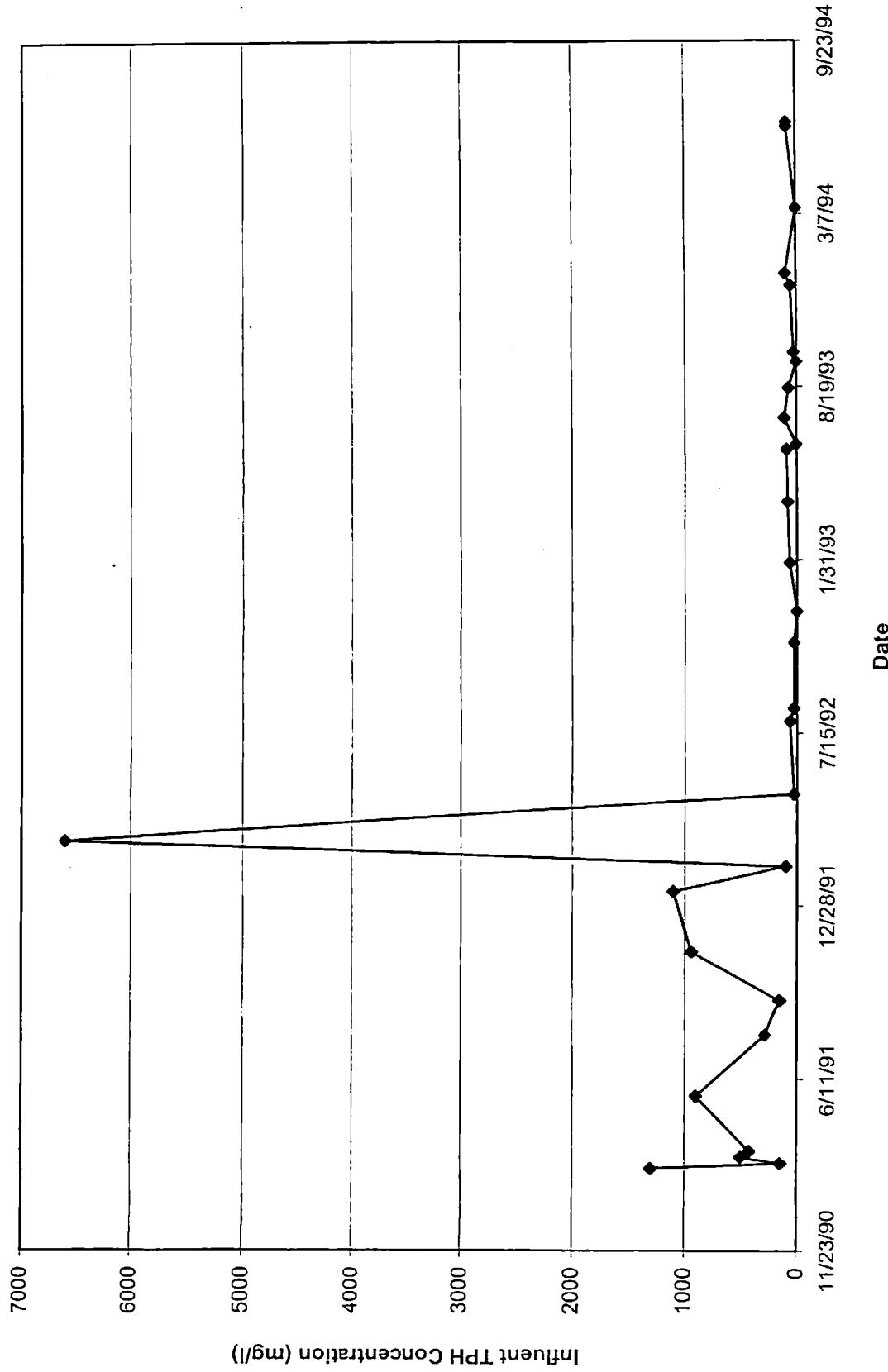


Figure 8: Summary of Groundwater Extraction System Influent Data
9301 Greenback Lane, Orangevale, CA (Site #67090)



APPENDIX A:
RECORD OWNER OF FEE TITLE HOLDER NOTIFICATION



Tesoro Petroleum Companies, Inc.
Corporate Environmental Affairs
3450 South 344th Way, Suite 100
Auburn, WA 98001-5931
253 896 8700
253 896 8887 Fax

August 1, 2003

Stickler Vance Partnership
Attn: Thala Wolin
11121 Upper Previtali Road
Jackson, CA 95642

VIA CERTIFIED MAIL

RE: Notification of Request for Case Closure
Former Beacon Station, 9301 Greenback Lane
Orangevale, California

Dear Ms. Wolin:

This letter is to provide notification to the fee title holder for property at 9301 Greenback Lane, that Tesoro Refining and Marketing Company will submit a case closure request to the Sacramento County Environmental Management Department (SCEMD). This notification is provided in accordance with SCEMD guidelines.

Please feel free to call me at 253/896-8700 or Jeff Hennier of Azure Environmental at 415/460-1561 if you have any questions.

Sincerely,

Catherine Runden

Catherine Runden
Environmental Projects Coordinator
Tesoro Petroleum Companies, Inc.

cc: Susan Erikson, SCEMD
 Jeff Hennier, Azure Environmental
Brian Kelleher, Kelleher & Associates

APPENDIX B

SUMMARY OF UST REMOVAL AND SOIL STOCKPILE SAMPLE RESULTS (DELTA, 1990; 1995)

TABLE 3

**ANALYTICAL RESULTS FOR SOIL SAMPLES COLLECTED FROM GASOLINE
TANK PIT AND PRODUCT LINE EXCAVATIONS**
Concentrations in milligrams per kilogram (mg/kg)

Beacon Station No. 685
9301 Greenback Lane
Orangevale, California

<u>Sample No.</u>	<u>Date</u>	<u>Depth (ft)</u>	<u>Benzene</u>	<u>Toluene</u>	<u>Ethyl-benzene</u>	<u>Total Xylenes</u>	<u>TPH* as gasoline</u>	<u>Total Lead</u>
<u>Tank Pit Samples</u>								
Prem. Unl. N. End	05/22/90	14	820	1,200	260	1,200	16,000	NA ^b
Prem. Unl. S. End	05/22/90	14	930	1,000	49	140	17,000	NA
Unleaded N. End	05/22/90	14	84	81	25	200	2,500	2.2
Unleaded S. End	05/22/90	14	0.8	0.3	<0.1	1.8	59	1.3
Leaded N. End	05/22/90	14	140	160	4.3	520	6,300	3.8
Leaded S. End	05/22/90	14	0.1	0.1	<0.1	0.3	11	13
<u>Product Line Samples</u>								
PT-1	06/18/90		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
PT-2	06/18/90		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
PT-3	06/18/90		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
PT-4	06/18/90		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
PT-5	06/18/90		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
PT-6	06/18/90		<0.1	<0.1	<0.1	1.3	19	<0.1

* Total petroleum hydrocarbons.

^b Not analyzed.

TABLE 4
ANALYTICAL RESULTS FOR SOIL SAMPLES
COLLECTED FROM THE WASTE OIL TANK PIT

Beacon Station No. 685
9301 Greenback Lane
Orangevale, California

Sample No.	Depth (ft)	Date	Benzene (mg/kg) ^d	Toluene (mg/kg)	Ethyl- benzene (mg/kg)	Total Xylenes (mg/kg)	TPH* as gasoline (mg/kg)	TPH as diesel (mg/kg)	TOG ^b (mg/kg)	VOC ^c (µg/L ^f)	Cadmium (mg/L ^e)	Chromium (mg/L)	Lead (mg/L)	Nickel (mg/L)	Zinc (mg/L)
WO-1	8	06/22/90	<0.1	<0.1	<0.1	<0.1	<1.0	<5	<50	<5	NA ^g	NA	NA	NA	NA
WO-2	8	06/26/90	NA	NA	NA	NA	NA	NA	NA	NA	0.012	0.066	0.078	0.14	2.94

- ^a Total petroleum hydrocarbons.
- ^b Total oil and grease.
- ^c Volatile organic compounds.
- ^d Milligrams per kilogram.
- ^e Micrograms per liter.
- ^f Milligrams per liter.
- ^g Not analyzed.

BS028581

Soils From Excavation	Soil Sample Analytical Results of Stockpiled Soil (ppm)						
	Benzene	Toluene	Ethyl-benzene	Xylenes	TPH ^a	TPH ^b	Total Lead
Soils #1 (NSEW)	1.2	1.6	2.1	12	160	9.3	0.1 NAs
05/22/90							
Soils #2 (1-4)	<0.1	<0.1	<0.1	0.2	8.7	5.5	ND ^d NAs
05-22-90							
Soils #2 (5-8)	<0.1	<0.1	0.1	0.3	1.0	23	9.5 0.1 NAs
05-22-90							
Soils #3 (1-4)	<0.1	<0.1	<0.1	24	24	14	ND NAs
05-22-90							
Soils #3 (5-8)	NAs	NAs	NAs	NAs	NAs	16	NAs
05-22-90							
Soils #4 (1-4)	270	500	130	590	5,400	<10	ND NAs
05-22-90							
Soils #4 (1-4)	23	24	15	34	830	<5.0	ND 5.9
05-22-90							
Soils #5 (1-4)	<0.1	20	7.0	120	880	9.9	3.1 8.1
05-23-90							
Soils #5 (5-8)	<0.1	5.7	42	2.5	300	9.4	12 8.0
05-23-90							
Soils #6 (1-4)	<0.1	<0.1	<0.1	12	16	<5.0	2.3 5.5
05-24-90							
Soils #6 (5-8)	6.0	14	6.5	83	810	<5.0	1.8 5.5
05-24-90							
Soils A (1-4)	<0.1	<0.1	<0.1	0.7	6.6	NAs	<0.01 4.6
06-18-90							
Soils B (1-2)	<0.1	<0.1	<0.1	1.6	NAs	<0.01	4.5

^aTotal petroleum hydrocarbons as gasoline.
^bNot analyzed.
^cNot detected.

TABLE 4

Soil Sample Analytical Results
Waste Oil Tank Excavation

Sample WO-1 Collected 06/22/90

<u>Compound</u>	<u>Concentration</u>
Benzene	<0.1 ppm
Toluene	<0.1 ppm
Ethylbenzene	<0.1 ppm
Xylenes	<0.1 ppm
TPH (gasoline)	<1.0 ppm
TPH (diesel)	<5 ppm
TOG	<50 ppm
PCB	ND
 Chlorinated Hydrocarbons	
Benzene	—
Bromomethane	<5.0 ppb
Bromodichloromethane	<5.0 ppb
Bromoform	<5.0 ppb
Carbon tetrachloride	<5.0 ppb
Chlorobenzene	<5.0 ppb
Chloroethane	<5.0 ppb
2-Chloroethylvinyl ether	<5.0 ppb
Chloroform	<5.0 ppb
Chloromethane	<5.0 ppb
Dibromochloromethane	<5.0 ppb
1,1-Dichloroethane	<5.0 ppb
1,2-Dichloroethane	<5.0 ppb
1,1-Dichloroethene	<5.0 ppb
trans-1,2-Dichloroethane	<5.0 ppb
1,2-Dichloropropane	<5.0 ppb
1,3-Dichloropropene	<5.0 ppb
Ethylbenzene	—
Methylene chloride	<5.0 ppb
1,1,2,2-Tetrachloroethane	<5.0 ppb
Tetrachloroethane	<5.0 ppb
1,1,1-Trichloroethane	<5.0 ppb
1,1,2-Trichloroethane	<5.0 ppb
Trichloroethene	<5.0 ppb
Toluene	—
Vinyl chloride	<5.0 ppb
1,2-Dichlorobenzene	—
1,3-Dichlorobenzene	—
1,4-Dichlorobenzene	—
Total xylenes	—

Sample WO-2 Collected 06/26/90

Cd	0.012 mg/L
Cr	0.066 mg/L
Ni	0.14 mg/L
Pb	0.078 mg/L
Zn	2.94 mg/L

ND = Not detected.

BS028612

APPENDIX C

SUMMARY OF SOIL ANALYTICAL RESULTS
(DELTA, 1995)

TABLE 2
ANALYTICAL RESULTS FOR SOIL
SAMPLES COLLECTED FROM BORINGS
Concentrations in milligrams per kilogram (mg/kg)

Beacon Station No. 685
9301 Greenback Lane
Orangevale, California

<u>Sample ID</u>	<u>Depth (ft)</u>	<u>Date</u>	<u>Benzene</u>	<u>Toluene</u>	<u>Ethyl-benzene</u>	<u>Total Xylenes</u>	<u>TPH* as gasoline</u>
SB-1	25.5	05/17/88	2.79	1.67	ND	17.53	237.94
	35.5	05/17/88	ND ^b	ND	ND	ND	ND
	45.5	05/17/88	ND	ND	ND	ND	ND
	50.0	05/17/88	ND	ND	ND	ND	ND
MW-1	30	07/26/89	<0.02	<0.02	<0.02	<0.02	<5
MW-2	25	07/27/89	<0.02	<0.02	<0.02	<0.02	<5
MW-3	35	07/28/89	0.12	0.12	<0.02	<0.02	<5
VEW-1	10	07/28/89	<0.02	<0.02	<0.02	<0.02	<5
VEW-2	45	07/28/89	1.17	0.98	0.37	2.55	53.64
VEW-3	20	07/28/89	3.59	45.08	24.62	243.44	2,868.36
VEW-3	35	07/28/89	6.93	88.07	58.09	452.49	5,703.36
MW-4-6	30	02/22/90	<0.1	<0.1	<0.1	<0.1	<0.1
MW-4-10	50	02/22/90	<0.1	<0.1	<0.1	<0.1	<0.1
MW5-8	40	02/22/90	<0.1	<0.1	<0.1	<0.1	<0.1
MW5-9	45	02/22/90	<0.1	<0.1	<0.1	<0.1	<0.1
MW6-9	45	02/22/90	0.2	<0.1	<0.1	<0.1	1.3
MW6-10	50	02/22/90	<0.1	<0.1	<0.1	<0.1	1.6
MW7-8	40	05/21/91	<0.1	<0.1	<0.1	<0.1	<0.1
MW7-9	45	05/21/91	<0.1	<0.1	<0.1	<0.1	<0.1
MW8-8	40	05/21/91	<0.1	<0.1	<0.1	<0.1	<0.1
MW8-9	45	05/21/91	<0.1	<0.1	<0.1	<0.1	<0.1
SCB-1-4	20	01/27/92	<0.005	<0.005	<0.005	<0.005	<1.0
SCB-1-6	30	01/27/92	<0.005	<0.005	<0.005	<0.005	<1.0
SCB-2-4	20	01/27/92	<0.005	<0.005	<0.005	<0.005	<1.0
SCB-2-6	20	01/27/92	<0.005	<0.005	<0.005	<0.005	<1.0
SCB-3-4	20	01/27/92	<0.005	<0.005	<0.005	<0.005	<1.0
SCB-3-6	30	01/27/92	<0.005	<0.005	<0.005	<0.005	<1.0

TABLE 2-Continued

**ANALYTICAL RESULTS FOR SOIL
SAMPLES COLLECTED FROM BORINGS**
Concentrations in milligrams per kilogram (mg/kg)

Beacon Station No. 685
9301 Greenback Lane
Orangevale, California

<u>Sample ID</u>	<u>Depth (ft)</u>	<u>Date</u>	<u>Benzene</u>	<u>Toluene</u>	<u>Ethyl-benzene</u>	<u>Total Xylenes</u>	<u>TPH^a as gasoline</u>
SCB-3-7	35	01/27/92	<0.005	<0.005	<0.005	<0.005	<1.0
SCB-3-8	38	01/27/92	<0.005	<0.005	<0.005	<0.005	<1.0
SCB-4-4	20	01/27/92	<0.005	<0.005	<0.005	<0.005	<1.0
SCB-4-6	30	01/27/92	<0.005	<0.005	<0.005	<0.005	<1.0
SCB-4-7	35	01/27/92	<0.005	<0.005	<0.005	0.027	<1.0
SCB-4-8	38	01/27/92	0.006	0.005	0.010	0.034	<1.0

^a Total petroleum hydrocarbons.

^b Not detected. Detection limit not reported.

TABLE 1
SOIL SAMPLE ANALYTICAL RESULTS

Beacon Station No. 685
9301 Greenback Lane
Orangevale, California

Sample ID	Depth (ft)	Date	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Total Xylenes (mg/kg)	TPH as gasoline (mg/kg)	Oxygenate Compounds (mg/kg)	1,2 DCA (mg/kg)	Total Lead (mg/kg)
<u>Soil Borings</u>										
MW-9	26	04/28/99	ND	ND	ND	ND	ND	ND	ND	NA
	36.5	04/28/99	<0.0050	ND	ND	ND	ND	ND	ND	NA
MW-10	41.5	04/28/99	ND	ND	ND	ND	ND	ND	ND	NA
		04/28/99	ND	ND	ND	ND	ND	ND	ND	NA
<u>Soil Stockpile</u>										
SP-1A,B	41.5	04/28/99	ND	ND	ND	ND	ND	ND	ND	ND

TPH = Total petroleum hydrocarbons.

DCA = Dichloroethane.

Oxygenate Compounds = Methyl-tertiary-butyl ether, diisopropyl ether, ethyl-t-butyl ether, tert-amyl methyl ether, tert butanol, methanol and ethanol.

NA = Not analyzed.

ND = Not detected above the laboratory's reporting limits.

BEO81187

TABLE 1
ANALYTICAL RESULTS FOR SOIL
SAMPLES COLLECTED FROM BORINGS

Beacon Station No. 685
9301 Greenback Lane
Orangevale, California

Sample ID	Depth (ft)	Date	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl- benzene (mg/kg)	Total Xylenes (mg/kg)	TPH as gasoline (mg/kg)	MTBE (mg/kg)
HP-1	15	04/29/97	<0.005	<0.005	<0.005	<0.005	<1.0	<0.050
	25	04/29/97	<0.005	<0.005	<0.005	<0.005	<1.0	<0.050
	34.5	04/29/97	<0.005	<0.005	<0.005	<0.005	<1.0	<0.050
	44	04/29/97	<0.005	<0.005	<0.005	<0.005	<1.0	<0.050
	49	04/29/97	<0.005	<0.005	<0.005	<0.005	<1.0	<0.050
HP-2	15	04/30/97	<0.005	<0.005	<0.005	<0.005	<1.0	<0.050
	25	04/30/97	<0.005	<0.005	<0.005	<0.005	<1.0	<0.050
	35	04/30/97	<0.005	<0.005	<0.005	<0.005	<1.0	<0.050
	40	04/30/97	<0.005	<0.005	<0.005	<0.005	<1.0	<0.050
	45	04/30/97	<0.005	<0.005	<0.005	<0.005	<1.0	<0.050

TPH = Total petroleum hydrocarbons.
MTBE = Methyl tertiary butyl ether.

BEO81282

APPENDIX D
GEOLOGIC CROSS SECTIONS
(DELTA, 1995)

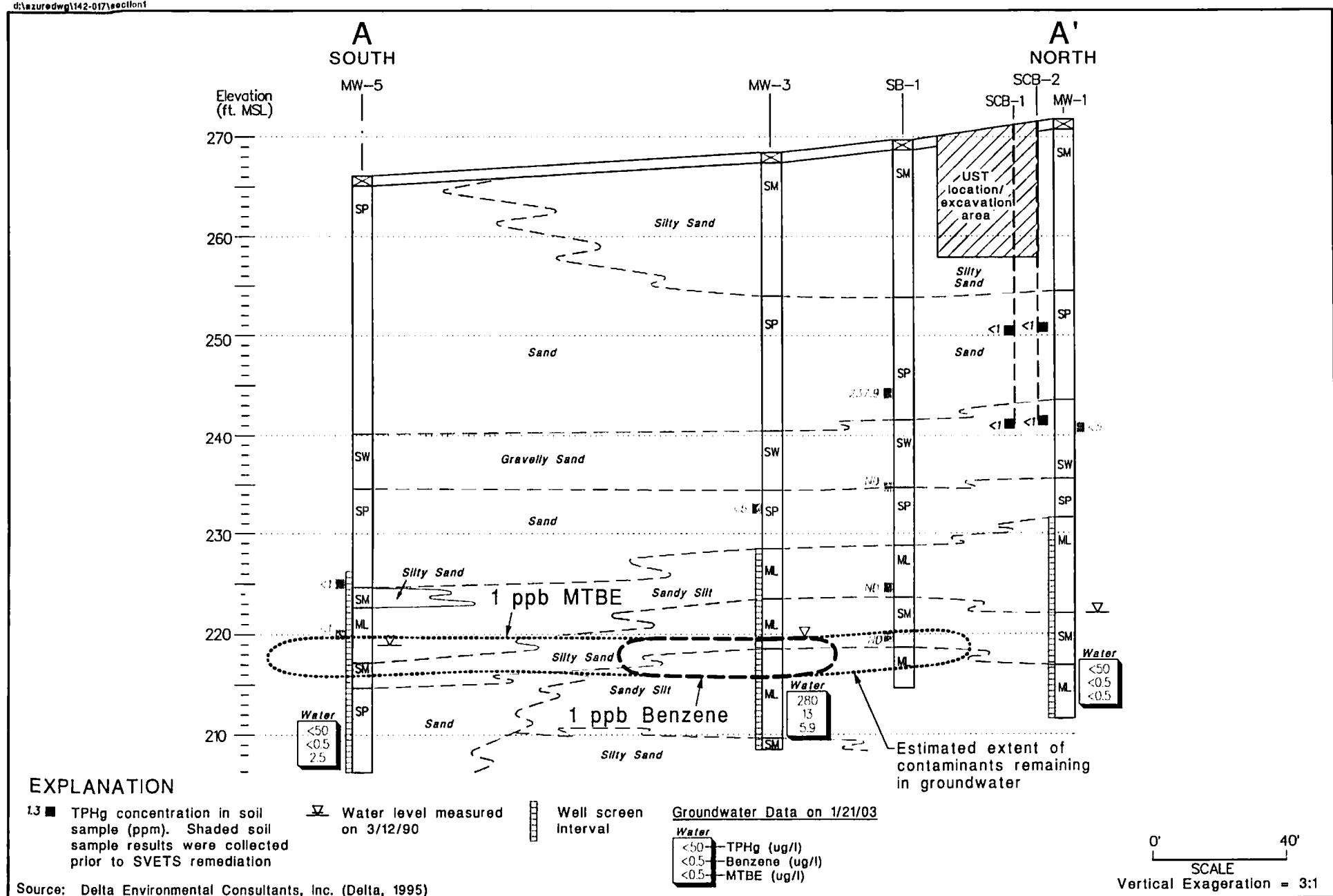


Figure D-1: Cross Section A - A'

AZURE ENVIRONMENTAL

AZ142-017

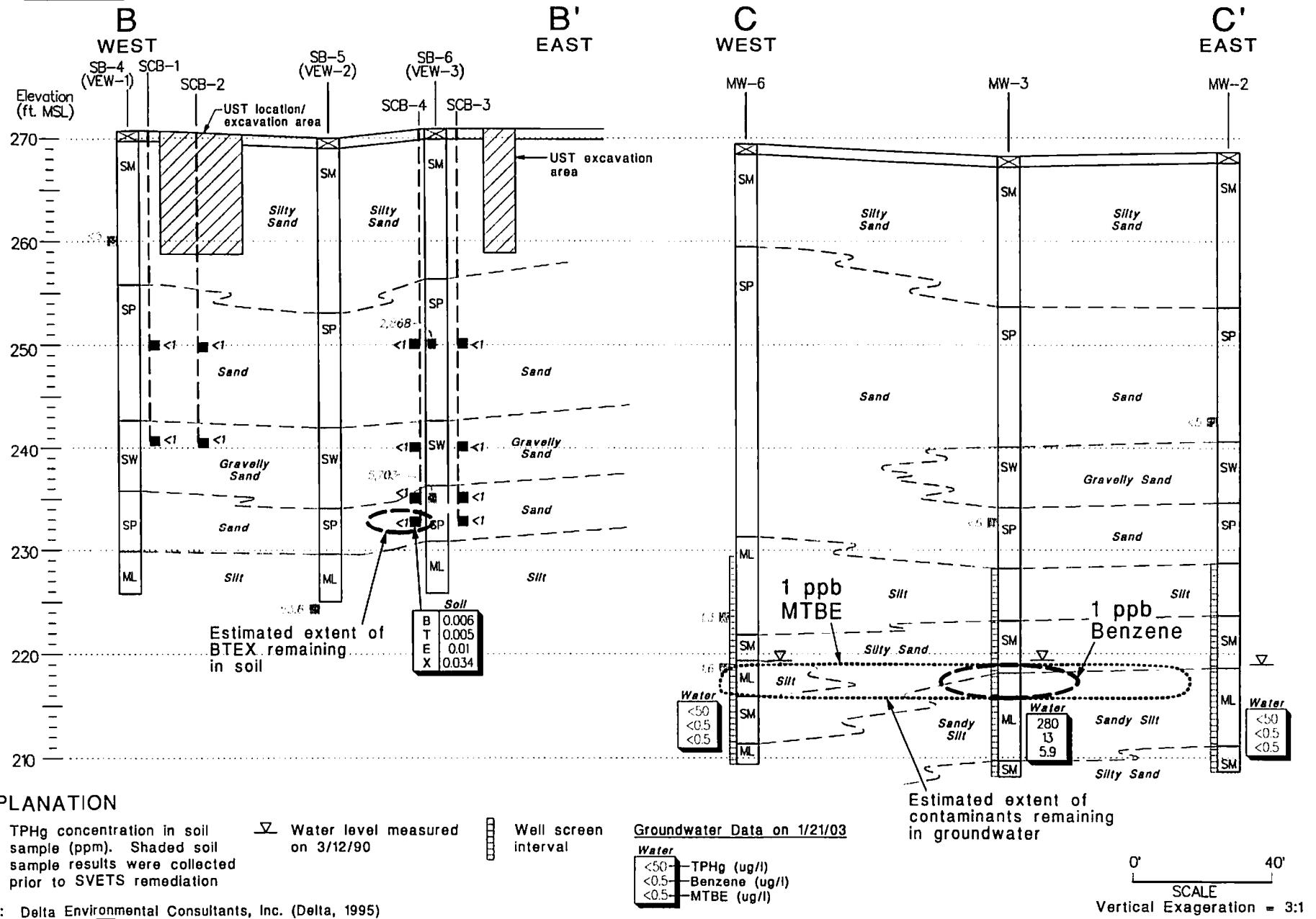


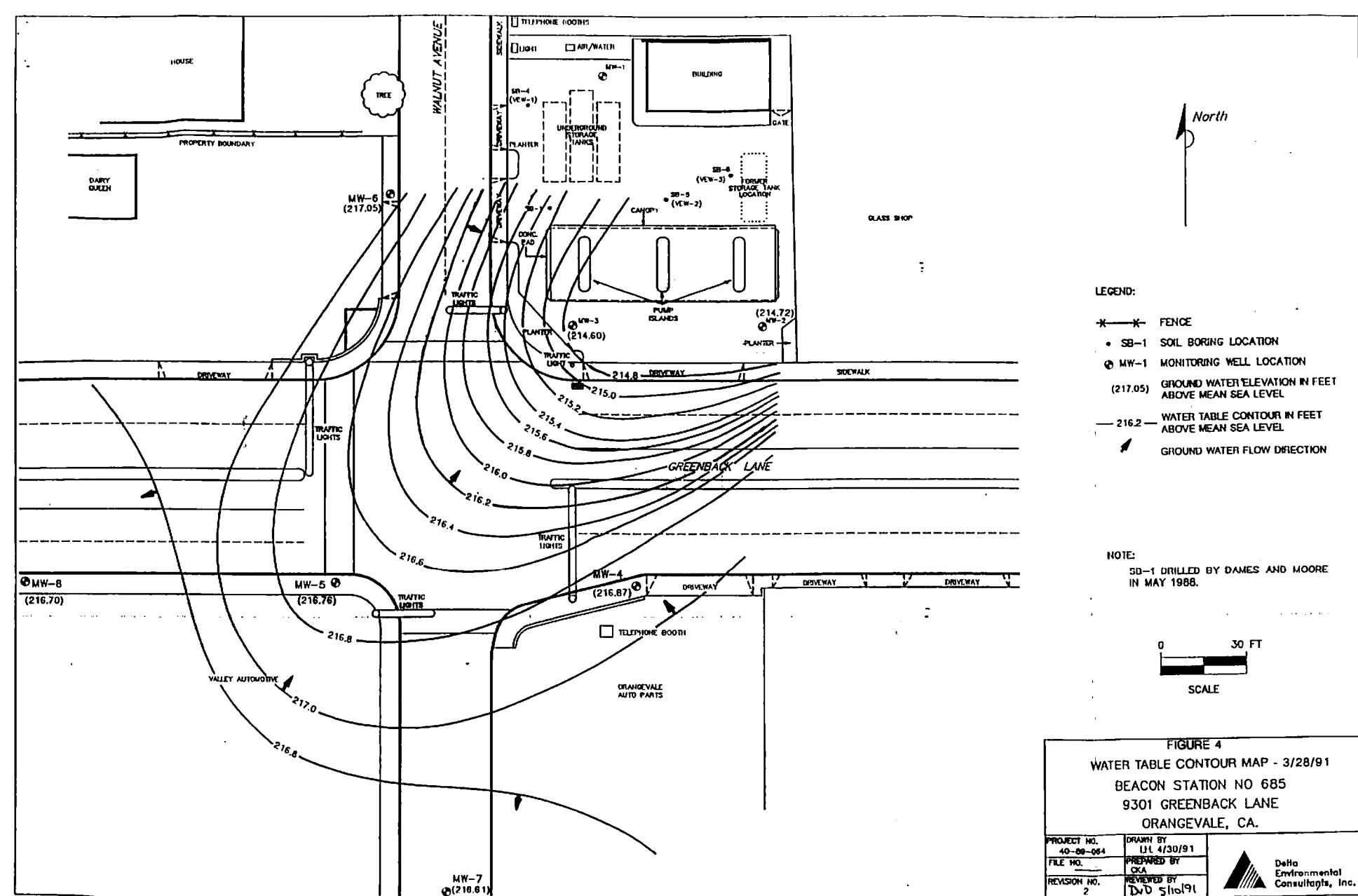
Figure D-2: Cross Section B-B' and C-C'

AZURE ENVIRONMENTAL

AZ142-017

APPENDIX E

**SUMMARY OF HISTORICAL GROUNDWATER LEVEL MEASUREMENTS AND SELECTED
GROUNDWATER ELEVATION CONTOUR MAPS
(RDM, 2003; DELTA, 1995)**



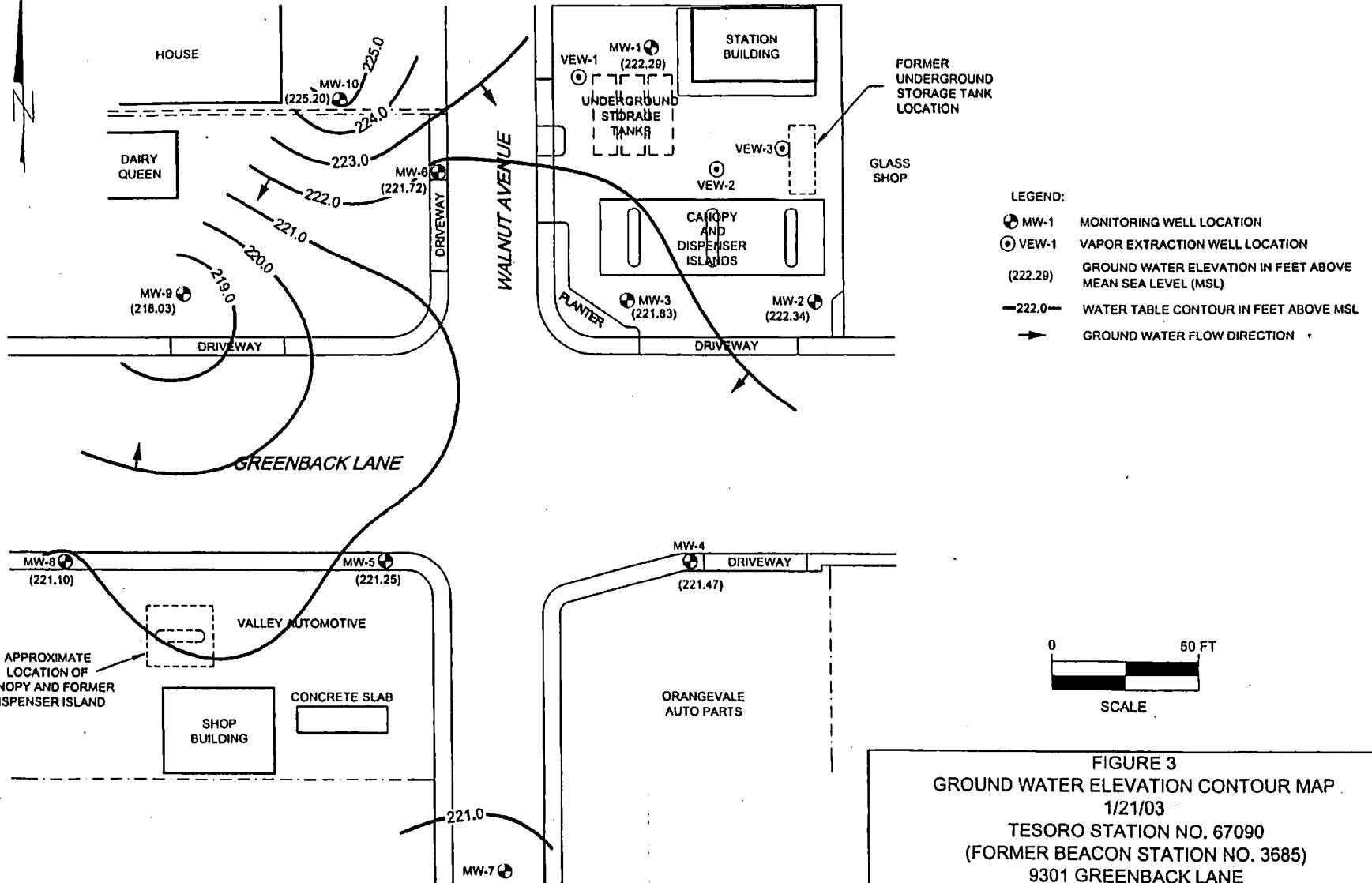


FIGURE 3
GROUND WATER ELEVATION CONTOUR MAP
1/21/03
TESORO STATION NO. 67090
(FORMER BEACON STATION NO. 3685)
9301 GREENBACK LANE
ORANGEVALE, CA.

PROJECT NO. 00-3685	DRAWN BY M.L. 2/5/03
FILE NO. 3685 Site	PREPARED BY RDM
REVISION NO. 1	REVIEWED BY



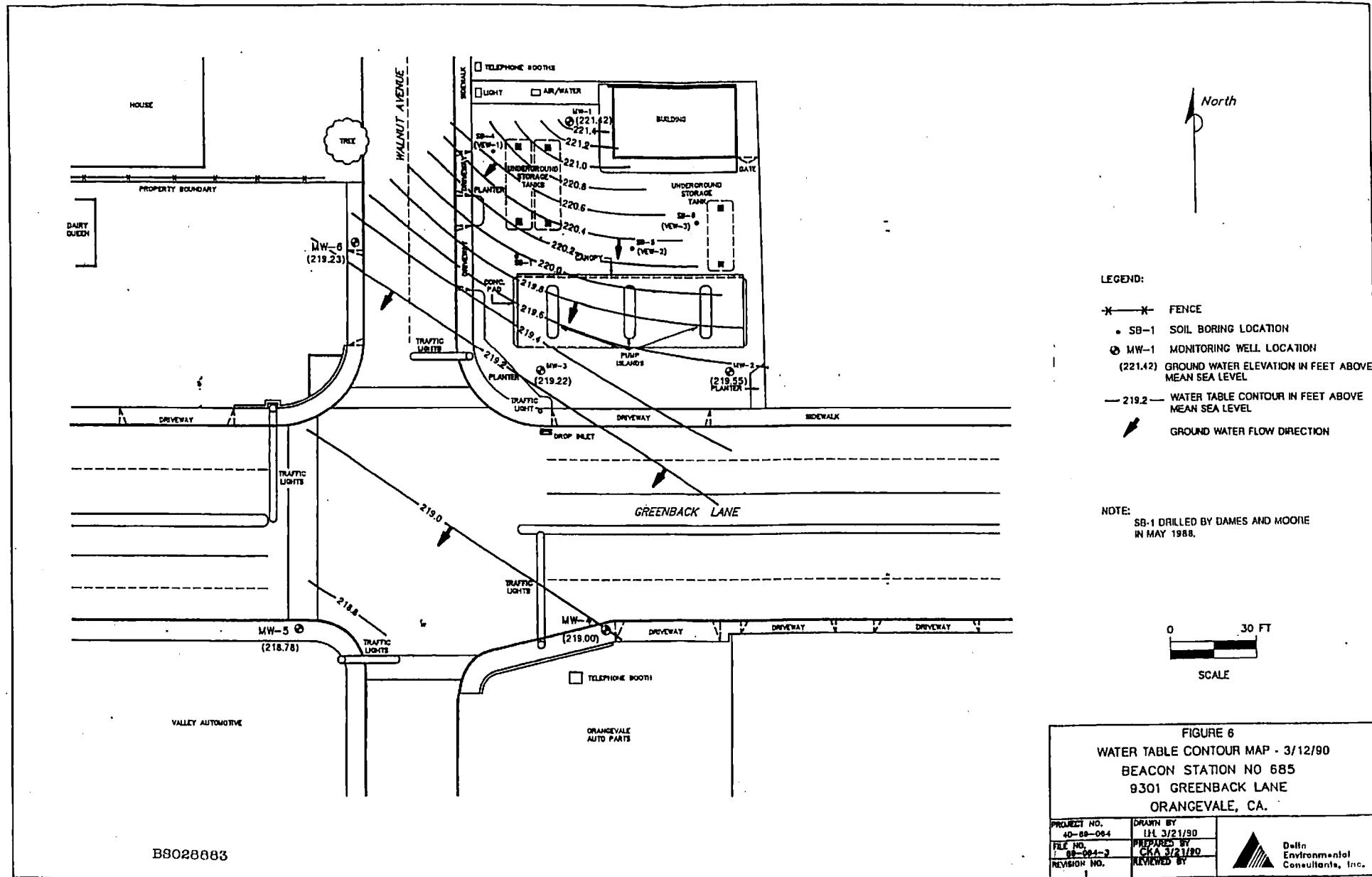


FIGURE 6
WATER TABLE CONTOUR MAP - 3/12/90
BEACON STATION NO 685
9301 GREENBACK LANE
ORANGEVALE, CA.

PROJECT NO. 40-88-064	DRAWN BY LH 3/21/80	
FILE NO. 100-004-3	PICTURED BY CRA 3/21/80	
REVISION NO. 1	REVIEWED BY	

TABLE 1
GROUND WATER ELEVATION DATA
BEACON STATION #3685
9301 GREENBACK LANE, ORANGEVALE, CALIFORNIA
(Measurements in feet)

Monitoring Well	Date	Reference Elevation (top of casing) ¹	Screened Interval (feet below grade)	Depth to Ground Water ¹	Ground Water Elevation ²	Well Depth	Comments
MW-1	12/17/93	271.03	40 - 60	49.02	222.01	—	
	03/14/94			43.08	227.95	—	
	06/16/94			40.56	230.47	—	
	08/30/94			44.49	226.54	59.01	
	11/04/94			48.42	222.61	59.00	
	01/20/95			47.63	223.40	58.98	
	06/13/95			42.76	228.27	59.00	
	09/28/95			43.02	228.01	59.03	
	12/30/95			44.49	226.54	59.03	
	03/26/96			43.31	227.72	59.02	
	05/18/96			43.48	227.55	59.05	
	09/26/96			43.90	227.13	58.98	
	12/06/96			44.01	227.02	58.96	
	03/26/97			41.58	229.45	58.97	
	06/30/97			43.07	227.96	58.97	
	09/04/97			43.92	227.11	58.97	
	12/29/97			47.60	223.43	58.97	
	03/28/98			41.21	229.82	58.98	
	06/11/98			40.90	230.13	58.96	
	08/27/98			42.07	228.96	58.98	
	12/04/98			43.80	227.23	58.96	
	03/03/99			44.14	226.89	58.97	
	05/18/99			43.99	227.04	58.98	
	08/18/99			45.80	225.23	58.43	
	11/02/99			47.35	223.68	58.43	
	02/02/00			48.48	222.55	58.43	
	05/11/00			45.68	225.35	58.42	
	09/05/00			45.97	225.06	58.42	
	10/27/00			46.81	224.22	58.42	
	01/29/01			48.30	222.73	58.43	
	04/17/01			48.21	222.82	58.43	
	08/16/01			49.04	221.99	58.43	
	10/15/01			49.39	221.64	58.43	

NOTES: 1 = Measurement and reference elevation taken from notch/mark on top north side of well casing.
 2 = Elevation referenced to mean sea level.
 — = Not measured/not observed.
 Well Depth = Measurement from top of casing to bottom of well.

TABLE 1
GROUND WATER ELEVATION DATA
BEACON STATION #3685
9301 GREENBACK LANE, ORANGEVALE, CALIFORNIA
(Measurements in feet)

Monitoring Well	Date	Reference Elevation (top of casing) ¹	Screened Interval (feet below grade)	Depth to Ground Water ¹	Ground Water Elevation ²	Well Depth	Comments
MW-2	12/17/93	268.07	40 - 60	47.50	220.57	—	
	03/14/94			47.30	220.77	—	
	06/16/94			47.90	220.17	—	
	08/30/94			48.92	219.15	58.75	
	11/04/94			49.56	218.51	58.90	
	01/20/95			48.51	219.56	58.71	
	06/13/95			43.04	225.03	58.76	
	09/28/95			43.33	224.74	58.74	
	12/30/95			44.38	223.69	58.72	
	03/26/96			43.18	224.89	58.71	
	05/18/96			43.15	224.92	59.02	
	09/26/96			43.73	224.34	59.04	
	12/06/96			44.01	224.06	59.04	
	03/26/97			41.34	226.73	59.03	
	06/30/97			42.56	225.51	59.02	
	09/04/97			42.94	225.13	59.01	
	12/29/97			43.47	224.60	59.01	
	03/28/98			39.98	228.09	59.01	
	06/11/98			39.76	228.31	59.02	
	08/27/98			40.68	227.39	59.01	
	12/04/98			42.15	225.92	59.02	
	03/03/99			42.16	225.91	59.02	
	05/18/99			42.50	225.57	59.01	
	08/18/99			43.13	224.94	59.01	
	11/02/99			43.79	224.28	59.01	
	02/02/00			44.61	223.46	59.01	
	05/11/00			42.35	225.72	59.01	
	09/05/00			42.87	225.20	59.01	
	10/27/00			43.15	224.92	59.01	
	01/29/01			45.20	222.87	59.02	
	04/17/01			45.10	222.97	59.01	
	08/16/01			45.38	222.69	59.01	
	10/15/01			45.71	222.36	59.01	

NOTES.

¹ =

Measurement and reference elevation taken from notch/mark on top north side of well casing.

² =

Elevation referenced to mean sea level.

— =

Not measured/not observed.

Well Depth =

Measurement from top of casing to bottom of well.

TABLE 1
GROUND WATER ELEVATION DATA
BEACON STATION #3685
9301 GREENBACK LANE, ORANGEVALE, CALIFORNIA
(Measurements in feet)

Monitoring Well	Date	Reference Elevation (top of casing) ¹	Screened Interval (feet below grade)	Depth to Ground Water ¹	Ground Water Elevation ²	Well Depth	Comments
MW-3	12/17/93	267.06	40 - 60	50.95	216.11	—	
	03/14/94			46.72	220.34	—	
	06/16/94			51.14	215.92	—	
	08/30/94			49.43	217.63	53.75	
	11/04/94			50.17	216.89	53.75	
	01/20/95			49.20	217.86	53.73	
	06/13/95			43.28	223.78	56.90	
	09/28/95			43.46	223.60	56.92	
	12/30/95			44.55	222.51	56.75	
	03/26/96			43.34	223.72	56.75	
	05/18/96			43.47	223.59	56.75	
	09/26/96			44.00	223.06	56.68	
	12/06/96			44.78	222.28	56.71	
	03/26/97			41.84	225.22	56.73	
	06/30/97			42.84	224.22	56.74	
	09/04/97			43.02	224.04	56.73	
	12/29/97			44.03	223.03	56.73	
	03/28/98			40.11	226.95	56.74	
	06/11/98			39.95	227.11	56.73	
	08/27/98			40.69	226.37	56.74	
	12/04/98			42.13	224.93	56.73	
	03/03/99			42.09	224.97	56.74	
	05/18/99			42.55	224.51	56.73	
	08/18/99			43.11	223.95	56.74	
	11/02/99			43.74	223.32	56.73	
	02/02/00			44.59	222.47	56.74	
	05/11/00			42.71	224.35	56.74	
	09/05/00			43.14	223.92	56.74	
	10/27/00			43.69	223.37	56.74	
	01/29/01			45.07	221.99	56.74	
	04/17/01			44.91	222.15	56.74	
	08/16/01			45.43	221.63	56.74	
	10/15/01			45.79	221.27	56.74	

NOTES: 1 = Measurement and reference elevation taken from notch/mark on top north side of well casing.
 2 = Elevation referenced to mean sea level.
 — = Not measured/not observed.
 Well Depth = Measurement from top of casing to bottom of well.

TABLE 1
GROUND WATER ELEVATION DATA
BEACON STATION #3685
9301 GREENBACK LANE, ORANGEVALE, CALIFORNIA
(Measurements in feet)

Monitoring Well	Date	Reference Elevation (top of casing) ¹	Screened Interval (feet below grade)	Depth to Ground Water ¹	Ground Water Elevation ²	Well Depth	Comments
MW-4	12/17/93	267.81	40 - 60	49.30	218.51	—	
	03/14/94			49.09	218.72	—	
	06/16/94			49.93	217.88	—	
	08/30/94			49.85	217.96	59.75	
	11/04/94			50.18	217.63	59.73	
	01/20/95			49.66	218.15	59.74	
	06/13/95			44.49	223.32	59.75	
	09/28/95			44.75	223.06	59.74	
	12/30/95			45.73	222.08	59.72	
	03/26/96			44.55	223.26	59.71	
	05/18/96			44.42	223.39	59.97	
	09/26/96			44.90	222.91	59.87	
	12/06/96			45.51	222.30	59.89	
	03/26/97			42.77	225.04	59.87	
	06/30/97			43.85	223.96	59.89	
	09/04/97			44.12	223.69	59.90	
	12/29/97			45.04	222.77	59.90	
	03/28/98			41.12	226.69	59.91	
	06/11/98			41.24	226.57	59.92	
	08/27/98			41.78	226.03	59.93	
	12/04/98			43.14	224.67	59.94	
	03/03/99			43.22	224.59	59.94	
	05/18/99			43.61	224.20	59.95	
	08/18/99			44.15	223.66	59.94	
	11/02/99			44.75	223.06	59.94	
	02/02/00			45.61	222.20	59.93	
	05/11/00			42.22	225.59	59.93	
	09/05/00			44.31	223.50	59.94	
	10/27/00			44.75	223.06	59.94	
	01/29/01			45.16	222.65	59.92	
	04/17/01			45.05	222.76	59.91	
	08/16/01			46.48	221.33	59.90	
	10/15/01			46.87	220.94	59.90	

NOTES: 1 = Measurement and reference elevation taken from notch/mark on top north side of well casing.
 2 = Elevation referenced to mean sea level.
 — = Not measured/not observed.
 Well Depth = Measurement from top of casing to bottom of well.

TABLE 1
GROUND WATER ELEVATION DATA
BEACON STATION #3685
9301 GREENBACK LANE, ORANGEVALE, CALIFORNIA
(Measurements in feet)

Monitoring Well	Date	Reference Elevation (top of casing) ¹	Screened Interval (feet below grade)	Depth to Ground Water ¹	Ground Water Elevation ²	Well Depth	Comments
MW-5	12/17/93	265.77	40 - 60	47.42	218.35	—	
	03/14/94			47.22	218.55	—	
	06/16/94			48.03	217.74	—	
	08/30/94			47.99	217.78	59.13	
	11/04/94			48.33	217.44	58.14	
	01/20/95			47.76	218.01	59.12	
	06/13/95			42.59	223.18	59.13	
	09/28/95			42.89	222.88	59.10	
	12/30/95			43.89	221.88	59.11	
	03/26/96			42.68	223.09	59.12	
	05/18/96			42.68	223.09	58.34	
	09/26/96			43.16	222.61	58.22	
	12/06/96			43.72	222.05	58.25	
	03/26/97			40.97	224.80	58.20	
	06/30/97			41.96	223.81	58.21	
	09/04/97			42.37	223.40	58.20	
	12/29/97			43.30	222.47	58.20	
	03/28/98			39.56	226.21	58.21	
	06/11/98			39.48	226.29	58.20	
	08/27/98			40.18	225.59	58.21	
	12/04/98			41.55	224.22	58.20	
	03/03/99			41.51	224.26	58.20	
	05/18/99			42.01	223.76	58.20	
	08/18/99			42.46	223.31	58.21	
	11/02/99			43.06	222.71	58.20	
	02/02/00			43.88	221.89	58.20	
	05/11/00			43.81	221.96	58.20	
	09/05/00			42.54	223.23	58.20	
	10/27/00			43.12	222.65	58.20	
	01/29/01			44.42	221.35	58.21	
	04/17/01			44.80	220.97	58.21	
	08/16/01			44.81	220.96	58.21	
	10/15/01			45.15	220.62	58.21	

NOTES: 1 = Measurement and reference elevation taken from notch/mark on top north side of well casing.
 2 = Elevation referenced to mean sea level.
 — = Not measured/not observed.
 Well Depth = Measurement from top of casing to bottom of well.

TABLE 1
GROUND WATER ELEVATION DATA
BEACON STATION #3685
9301 GREENBACK LANE, ORANGEVALE, CALIFORNIA
(Measurements in feet)

Monitoring Well	Date	Reference Elevation (top of casing) ¹	Screened Interval (feet below grade)	Depth to Ground Water ¹	Ground Water Elevation ²	Well Depth	Comments
MW-6	12/17/93	269.25	40 - 60	50.46	218.79	—	
	03/14/94			50.19	219.06	—	
	06/16/94			51.10	218.15	—	
	08/30/94			51.01	218.24	58.77	
	11/04/94			51.36	217.89	58.75	
	01/20/95			50.78	218.47	58.73	
	06/13/95			45.43	223.82	58.73	
	09/28/95			45.79	223.46	58.72	
	12/30/95			46.84	222.41	58.75	
	03/26/96			45.58	223.67	58.71	
	05/18/96			45.59	223.66	58.84	
	09/26/96			46.11	223.14	58.75	
	12/06/96			46.60	222.65	58.76	
	03/26/97			43.79	225.46	58.78	
	06/30/97			44.87	224.38	58.78	
	09/04/97			45.28	223.97	58.79	
	12/29/97			46.24	223.01	58.79	
	03/28/98			42.39	226.86	58.78	
	06/11/98			42.31	226.94	58.77	
	08/27/98			43.03	226.22	58.76	
	12/04/98			44.43	224.82	58.77	
	03/03/99			44.41	224.84	58.78	
	05/18/99			44.95	224.30	58.76	
	08/18/99			45.42	223.83	58.74	
	11/02/99			46.05	223.20	58.74	
	02/02/00			46.91	222.34	58.74	
	05/11/00			45.09	224.16	58.73	
	09/05/00			45.42	223.83	58.72	
	10/27/00			46.08	223.17	58.72	
	01/29/01			47.41	221.84	58.70	
	04/17/01			47.26	221.99	58.70	
	08/16/01			47.80	221.45	58.70	
	10/15/01			48.16	221.09	58.70	

NOTES: 1 = Measurement and reference elevation taken from notch/mark on top north side of well casing.
 2 = Elevation referenced to mean sea level.
 — = Not measured/not observed.
 Well Depth = Measurement from top of casing to bottom of well.

TABLE I
GROUND WATER ELEVATION DATA
BEACON STATION #3685
9301 GREENBACK LANE, ORANGEVALE, CALIFORNIA
(Measurements in feet)

Monitoring Well	Date	Reference Elevation (top of casing) ¹	Screened Interval (feet below grade)	Depth to Ground Water ¹	Ground Water Elevation ²	Well Depth	Comments
MW-7	12/17/93	259.69	40 - 60	41.63	218.06	—	
	03/14/94			41.50	218.19	—	
	06/16/94			42.30	217.39	—	
	08/30/94			42.28	217.41	59.18	
	11/04/94			42.60	217.09	59.18	
	01/20/95			42.00	217.69	59.18	
	06/13/95			37.03	222.66	59.20	
	09/28/95			37.29	222.40	59.18	
	12/30/95			38.23	221.46	59.18	
	03/26/96			37.11	222.58	59.20	
	05/18/96			37.08	222.61	59.33	
	09/26/96			37.51	222.18	59.34	
	12/06/96			38.11	221.58	59.34	
	03/26/97			35.41	224.28	59.33	
	06/30/97			36.31	223.38	59.36	
	09/04/97			36.71	222.98	59.37	
	12/29/97			37.62	222.07	59.37	
	03/28/98			33.99	225.70	59.38	
	06/11/98			33.89	225.80	59.39	
	08/27/98			34.56	225.13	59.40	
	12/04/98			35.93	223.76	59.43	
	03/03/99			35.90	223.79	59.45	
	05/18/99			36.35	223.34	59.44	
	08/18/99			36.76	222.93	59.44	
	11/02/99			37.35	222.34	59.45	
	02/02/00			38.11	221.58	59.45	
	05/11/00			36.61	223.08	59.45	
	09/05/00			37.03	222.66	59.45	
	10/27/00			37.45	222.24	59.45	
	01/29/01			36.64	223.05	59.45	
	04/17/01			36.51	223.18	59.46	
	08/16/01			39.11	220.58	59.46	
	10/15/01			39.36	220.33	59.46	

NOTES: 1 = Measurement and reference elevation taken from notch/mark on top north side of well casing.
 2 = Elevation referenced to mean sea level.
 — = Not measured/not observed.
 Well Depth = Measurement from top of casing to bottom of well.

TABLE 1
GROUND WATER ELEVATION DATA
BEACON STATION #3685
9301 GREENBACK LANE, ORANGEVALE, CALIFORNIA
(Measurements in feet)

Monitoring Well	Date	Reference Elevation (top of casing) ¹	Screened Interval (feet below grade)	Depth to Ground Water ¹	Ground Water Elevation ²	Well Depth	Comments
MW-8	12/17/93	264.04	40 - 60	45.84	218.20	—	
	03/14/94			45.71	218.33	—	
	06/16/94			46.54	217.50	—	
	08/30/94			46.49	217.55	58.62	
	11/04/94			46.81	217.23	59.34	
	01/20/95			46.14	217.90	58.61	
	06/13/95			40.98	223.06	58.65	
	09/28/95			41.34	222.70	58.65	
	12/30/95			42.37	221.67	58.65	
	03/26/96			41.11	222.93	58.66	
	05/18/96			41.11	222.93	59.31	
	09/26/96			41.63	222.41	59.30	
	12/06/96			42.23	221.81	59.33	
	03/26/97			39.44	224.60	59.31	
	06/30/97			40.45	223.59	59.34	
	09/04/97			40.87	223.17	59.30	
	12/29/97			41.74	222.30	59.30	
	03/28/98			38.01	226.03	59.31	
	06/11/98			37.98	226.06	59.31	
	08/27/98			38.72	225.32	59.32	
	12/04/98			40.02	224.02	59.30	
	03/03/99			39.99	224.05	59.29	
	05/18/99			40.53	223.51	59.28	
	08/18/99			40.99	223.05	59.28	
	11/02/99			41.55	222.49	59.27	
	02/02/00			42.37	221.67	59.27	
	05/11/00			40.65	223.39	59.27	
	09/05/00			40.98	223.06	59.28	
	10/27/00			41.63	222.41	59.28	
	01/29/01			40.61	223.43	59.28	
	04/17/01			40.46	223.58	59.28	
	08/16/01			43.30	220.74	59.27	
	10/15/01			43.63	220.41	59.27	
MW-9	05/18/99	265.07	38 - 53	44.36	220.71	—	
	08/18/99			44.89	220.18	53.93	
	11/02/99			45.58	219.49	53.92	
	02/02/00			46.47	218.60	53.91	
	05/11/00			44.45	220.62	53.91	
	09/05/00			44.90	220.17	53.91	
	10/27/00			42.22	222.85	53.91	
	01/29/01			46.96	218.11	53.90	
	04/17/01			46.80	218.27	53.90	
	08/16/01			47.31	217.76	53.90	
	10/15/01			47.70	217.37	53.90	

NOTES: 1 = Measurement and reference elevation taken from notch/mark on top north side of well casing.
 2 = Elevation referenced to mean sea level.
 — = Not measured/not observed.
 Well Depth = Measurement from top of casing to bottom of well.

TABLE 1
GROUND WATER ELEVATION DATA
BEACON STATION #3685
9301 GREENBACK LANE, ORANGEVALE, CALIFORNIA
(Measurements in feet)

Monitoring Well	Date	Reference Elevation (top of casing) ¹	Screened Interval (feet below grade)	Depth to Ground Water ¹	Ground Water Elevation ²	Well Depth	Comments
MW-10	05/18/99	268.74	39 - 54	41.12	227.62	—	
	08/18/99			41.58	227.16	53.91	
	11/02/99			42.19	226.55	53.90	
	02/02/00			43.03	225.71	53.90	
	05/11/00			41.22	227.52	53.90	
	09/05/00			41.60	227.14	53.90	
	10/27/00			43.60	223.14	53.90	
	01/29/01			43.55	225.19	53.89	
	04/17/01			43.41	225.33	53.87	
	08/16/01			43.94	224.80	53.87	
	10/15/01			44.28	224.46	53.87	

NOTES: MTBE¹ = Methyl-Tertiary-butyl-ether.
DIPE² = Diisopropyl ether.
1,2-DCA³ = 1,2-Dichloroethane.
11/02/99⁴ = Duplicate Sample.
< = Below indicated detection limit.
— = Not analyzed.
* = External standardization was used due to matrix interference.
- = Product was not typical gasoline.
08/24/00⁵ = Well Not Sampled on This Date

TABLE I
GROUND WATER MONITORING DATA

Tesoro Station No 67090
(Former Beacon Station No. 3685)
9301 Greenback Lane
Orangevale, California

Monitoring Well	Reference Elevation (ft)*	Date	Ground Water Elevation (ft)	Ground Water Elevation (ft)			Toluene ($\mu\text{g/L}$)	Xylenes ($\mu\text{g/L}$)	Total gasoline ($\mu\text{g/L}$)	MTBE ($\mu\text{g/L}$)	Oxygenates ($\mu\text{g/L}$)	Comments
				Benzene ($\mu\text{g/L}$)	Toluene ($\mu\text{g/L}$)	Ethylbenzene ($\mu\text{g/L}$)						
MW-1	05/02/02 06/13/02 01/21/03	273.00	49.14 49.53 50.71	223.86 223.47 222.29	<0.5 NS <0.5	<0.5 NS <0.5	<0.5 <0.5 <0.5	<0.5 NS <0.5	<0.5 NS <0.5	<0.5 NS <0.5	<0.5 NS <0.5	ND NS ND
MW-2	05/02/02 06/13/02 01/21/03	269.64	45.73 46.06 47.30	223.91 223.58 222.34	<0.5 NS <0.5	<0.5 NS <0.5	<0.5 NS <0.5	<0.5 NS <0.5	<0.5 NS <0.5	<0.5 NS <0.5	<0.5 NS <0.5	ND NS ND
MW-3	05/02/02 06/13/02 01/21/03	269.03	45.64 46.01 47.20	223.39 223.02 221.83	0.94 1.4 1.3	<0.5 <0.5 2.7	<0.5 <0.5 0.62	<0.5 <0.5 4.1	<0.5 <0.5 280	<0.5 52 5.9	6.9 3.8 1.9 ^a	2.8 ^b 1.6 ^b 64 ^{a, 24^c}
MW-4	05/02/02 06/13/02 01/21/03	269.79	46.85 47.20 48.32	222.94 222.59 221.47	<0.5 NS <0.5	<0.5 NS <0.5	<0.5 NS <0.5	<0.5 NS <0.5	<0.5 NS <0.5	<0.5 NS <0.5	<0.5 NS <0.5	0.58 ^b NS ND
MW-5	05/02/02 06/13/02 01/21/03	267.73	45.01 45.39 46.48	222.72 222.34 221.25	<0.5 <0.5 <0.5	<0.5 <0.5 <0.5	<0.5 <0.5 <0.5	<0.5 <0.5 <0.5	<0.5 <0.5 <0.5	<0.5 <0.5 <0.5	1.5 2.6 2.5	1.1 ^b 6.7 ^b 7.7 ^b
MW-6	05/02/02 06/13/02 01/21/03	271.25	48.01 48.39 49.53	221.24 222.86 221.72	0.51 0.66 <0.5	<0.5 <0.5 <0.5	<0.5 <0.5 <0.5	<0.5 NS NS	<0.5 NS NS	100 120 <0.5	1.3 1.1 <0.5	5.3 ^c , 1.9 ^b 1.5 ^a ND
MW-7	05/02/02 06/13/02 01/21/03	261.66	39.30 39.71 40.75	222.36 221.95 220.91	<0.5 NS <0.5	<0.5 NS <0.5	<0.5 NS <0.5	<0.5 NS <0.5	<0.5 NS <0.5	<0.5 NS <0.5	<0.5 NS <0.5	ND NS ND
MW-8	05/02/02 06/13/02 01/21/03	266.02	43.47 46.83 44.92	222.55 219.19 221.10	<0.5 NS <0.5	<0.5 NS <0.5	<0.5 NS <0.5	<0.5 NS <0.5	<0.5 NS <0.5	<0.5 NS <0.5	<0.5 NS <0.5	ND NS ND
MW-9	05/02/02 06/13/02 01/21/03	267.07	47.52 47.90 49.04	219.55 219.17 218.03	<0.5 <0.5 <0.5	<0.5 <0.5 <0.5	<0.5 <0.5 <0.5	<0.5 <0.5 <0.5	<0.5 NS <0.5	<0.5 NS <0.5	<0.5 NS <0.5	ND ND ND

TABLE 1
GROUND WATER MONITORING DATA

Tesoro Station No 67090
(Former Beacon Station No. 3685)
9301 Greenback Lane
Orangevale, California

Monitoring Well	Date	Reference Elevation (ft) ^a	Depth to Ground Water (ft)	Ground Water Elevation (ft)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	TPH as gasoline (µg/L)	MTBE (µg/L)	Oxygenates (µg/L)	Comments
MW-10	05/02/02	270.80	44.13	226.67	<0.5	<0.5	<0.5	<0.5	<50	<0.5	ND	
	06/13/02		44.50	226.30	<0.5	<0.5	<0.5	<0.5	<50	<0.5	ND	
	01/21/03		45.60	225.20	<0.5	<0.5	<0.5	<0.5	<50	<0.5	ND	

a = Elevations referenced to mean sea level

b = 1,2-dichloroethane

c = tert butanol

d = methanol

e = ethanol

TPH = Total petroleum hydrocarbons.

MTBE = Methyl tertiary butyl ether.

NA = Not analyzed

ND = Not detected at or above the laboratory reporting limit.

NS = Not sampled

µg/L = Micrograms per liter.

Oxygenates = diisopropyl ether, ethyl-t-butyl ether, tert-amyl methyl ether, tert-butanol

APPENDIX F

SUMMARY OF HISTORICAL GROUNDWATER ANALYTICAL RESULTS (RDM, 2003; DELTA, 1990)

TABLE F-1
SUMMARY OF GROUND-WATER SAMPLE ANALYSIS RESULTS
9301 Greenback Lane, Orangevale, California

Well No.	Date Sampled	Concentration (ug/l)						
		TPHg	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	Other Fuel Oxygenates
MW-1	7/28/1989	<5000	<20	<20	<20	<20	NS	NS
	10/12/89	300	14	<0.5	16	5	NS	NS
	02/23/90	340	10	<0.5	0.8	1.4	NS	NS
	04/30/90	540	<5	<0.5	0.9	1.9	NS	NS
	12/17/93	<50	<0.5	<0.5	<0.5	<0.5	NS	NS
	03/14/94	<50	<0.5	<0.5	<0.5	2.3	NS	NS
	06/16/94	<50	<0.5	<0.5	<0.5	<0.5	NS	NS
	08/30/94	<50	<0.5	<0.5	<0.5	<0.5	NS	NS
	11/04/94	<50	<0.5	<0.5	<0.5	<0.5	NS	NS
	01/20/95	<50	<0.5	<0.5	<0.5	<0.5	NS	NS
	06/13/95	<50	<0.5	<0.5	<0.5	<0.5	NS	NS
	09/28/95	270	<0.5	<0.5	<0.5	<0.5	NS	NS
	12/30/95	<50	<0.5	<0.5	<0.5	<0.5	NS	NS
	03/26/96	<50	<0.5	<0.5	<0.5	<0.5	NS	NS
	05/18/96	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	09/26/96	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	12/06/96	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	03/26/97	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	06/30/97	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	09/04/97	<50	<0.5	<0.5	<0.5	<0.5	7.4	NS
	12/29/97	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	03/28/98	<50	<0.5	<0.5	<0.5	<0.5	4.2	NS
	06/11/98	<50	<0.5	<0.5	<0.5	<0.5	<0.5	ND
	08/27/98	<50	<0.5	<0.5	<0.5	<0.5	2	ND
	12/04/98	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	03/03/99	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	05/18/99	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	08/18/99	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	11/02/99	<50	<0.5	<0.5	<0.5	<0.5	0.98	ND
	02/02/00	<50	<0.5	0.64	<0.5	<0.5	<5	NS
	02/22/00	<50	<0.5	0.56	<0.5	1.8	1.7	ND
	05/11/00	<50	<0.5	<0.5	<0.5	<0.5	0.5	ND
	08/16/01	<50	<0.5	<0.5	<0.5	<0.5	0.61	ND
	10/15/01	<50	<0.5	<0.5	<0.5	<0.5	0.53	ND
	05/02/02	<50	<0.5	<0.5	<0.5	<0.5	<0.5	ND
	01/21/03	<50	<0.5	<0.5	<0.5	<0.5	<0.5	ND
MW-2	7/28/1989	<5000	80	<20	<20	<20	NS	NS
	10/12/89	430	180	<0.5	<0.5	<0.5	NS	NS
	02/23/90	1,500	490	2.3	2.1	23	NS	NS
	04/30/90	870	150	8.4	4.9	38	NS	NS
	12/17/93	71	<0.5	<0.5	<0.5	<0.5	NS	NS
	03/14/94	<50	<0.5	<0.5	<0.5	<0.5	NS	NS
	06/16/94	<50	<0.5	<0.5	<0.5	1.3	NS	NS
	08/30/94	<50	<0.5	<0.5	<0.5	<0.5	NS	NS
	11/04/94	<50	<0.5	<0.5	<0.5	<0.5	NS	NS
	01/20/95	<50	<0.5	<0.5	<0.5	<0.5	NS	NS
	06/13/95	<50	<0.5	<0.5	<0.5	<0.5	NS	NS
	09/28/95	55	<0.5	<0.5	<0.5	<0.5	NS	NS
	12/30/95	<50	<0.5	<0.5	<0.5	<0.5	NS	NS
	03/26/96	<50	<0.5	<0.5	<0.5	<0.5	NS	NS
	05/18/96	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	09/26/96	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	12/06/96	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	03/26/97	<50	<0.5	<0.5	<0.5	<0.5	<5	NS

TABLE F-1 (cont.)

Well No.	Date Sampled	Concentration (ug/l)						
		TPHg	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	
MW-2 (cont.)	06/30/97	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	09/04/97	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	12/29/97	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	03/28/98	<50	<0.5	<0.5	<0.5	<0.5	<0.5	NS
	06/11/98	<50	<0.5	<0.5	<0.5	<0.5	<0.5	ND
	08/27/98	<50	<0.5	<0.5	<0.5	<0.5	<0.5	ND
	12/04/98	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	03/03/99	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	05/18/99	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	08/18/99	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	11/02/99	<50	<0.5	<0.5	<0.5	<0.5	<0.5	ND
	02/02/00	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	02/22/00	<50	<0.5	<0.5	<0.5	1.8	0.55	ND
	05/11/00	<50	<0.5	<0.5	<0.5	<0.5	<0.5	ND
	08/16/01	<50	<0.5	<0.5	<0.5	<0.5	<0.5	ND
	10/15/01	<50	<0.5	<0.5	<0.5	<0.5	<0.5	ND
	05/02/02	<50	<0.5	<0.5	<0.5	<0.5	<0.5	ND
	01/21/03	<50	<0.5	<0.5	<0.5	<0.5	<0.5	64 ^d ,24 ^c
MW-3	7/28/1989	8,030	1,030	230	60	220	NS	NS
	10/12/89	25,000	5,000	2,000	190	1,600	NS	NS
	02/23/90	15,000	4,800	1,300	190	670	NS	NS
	04/30/90	25,000	3,300	3,300	220	1,800	NS	NS
	12/17/93	5,900	2,000	460	76	420	NS	NS
	03/14/94	1,900	740	110	23	150	NS	NS
	06/16/94	86	2.1	<0.5	<0.5	2.2	NS	NS
	08/30/94	52	4.8	1.3	<0.5	1.8	NS	NS
	11/04/94	80	11	3.7	0.51	4.5	NS	NS
	01/20/95	120	13	5.3	1	8.9	NS	NS
	06/13/95	3,400	500	350	73	420	NS	NS
	09/28/95	840	40	6	31	97	NS	NS
	12/30/95	6,200	410	98	170	570	NS	NS
	03/26/96	8,000	610	140	170	560	NS	NS
	05/18/96	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	09/26/96	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	12/06/96	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	03/26/97	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	06/30/97	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	09/04/97	<50	0.57	<0.5	<0.5	<0.5	<5	NS
	12/29/97	140	0.57	<0.5	<0.5	0.61	8.8	NS
	03/28/98	370	170	1.4	<0.5	3.9	5	NS
	06/11/98	510	62	2.7	<0.5	13	16	32 ^c
	08/27/98	760	150	7.7	4	35	20	0.7 ^a ,91 ^c ,71 ^d
	12/04/98	<50	0.65	<0.5	<0.5	0.62	14	NS
	03/03/99	<50	<0.5	<0.5	<0.5	<0.5	7.4	NS
	05/18/99	<50	<0.5	<0.5	<0.5	<0.5	7.1	NS
	08/18/99	73	<0.5	<0.5	<0.5	<0.5	9.4	NS
	11/02/99	91	<0.5	<0.5	<0.5	<0.5	10	5.1 ^c ,2 ^b
	02/02/00	210	<0.5	<0.5	<0.5	<0.5	5.2	NS
	02/22/00	120	<0.5	<0.5	<0.5	<0.5	5.9	5.9 ^c
	05/11/00	180	7.2	2.3	<0.5	2.1	9.4	7.3 ^c ,3.1 ^b
	09/05/00	65	3.7	<0.5	<0.5	<0.5	8.1	7.3 ^c ,2.4 ^b
	10/27/00	220	0.99	<0.5	<0.5	0.68	4.9	1.2 ^b
	01/23/01	170	0.92	<0.5	<0.5	<0.5	3.6	1.4 ^b
	04/17/01	61	<0.5	<0.5	<0.5	<0.5	7.4	2.3 ^b
	08/16/01	<50	0.86	<0.5	<0.5	<0.5	6.7	2.2 ^b
	10/15/01	82	<0.5	<0.5	<0.5	<0.5	4.4	1.4 ^b

TABLE F-1 (cont.)

Well No.	Date Sampled	Concentration (ug/l)						
		TPHg	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	Other Fuel Oxygenates
MW-3 (cont.)	05/02/02	52	0.94	<0.5	<0.5	<0.5	6.9	2.8 ^b
	06/13/02	<50	1.4	<0.5	<0.5	<0.5	3.8	1.6 ^b
	01/21/03	280	13	2.7	0.62	4.1	5.9	1.9 ^b
MW-4	02/23/90	84	<0.5	<0.5	<0.5	<0.5	NS	NS
	03/12/90	<50	5.5	<0.5	<0.5	0.6	NS	NS
	04/30/90	220	36	<0.5	<0.5	9	NS	NS
	12/17/93	<50	<0.5	<0.5	<0.5	<0.5	NS	NS
	03/14/94	<50	<0.5	<0.5	<0.5	<0.5	NS	NS
	06/16/94	<50	<0.5	<0.5	<0.5	<0.5	NS	NS
	08/30/94	<50	<0.5	<0.5	<0.5	<0.5	NS	NS
	11/04/94	<50	<0.5	<0.5	<0.5	<0.5	NS	NS
	01/20/95	<50	<0.5	<0.5	<0.5	<0.5	NS	NS
	06/13/95	<50	<0.5	<0.5	<0.5	<0.5	NS	NS
	09/28/95	<50	<0.5	<0.5	<0.5	<0.5	NS	NS
	12/30/95	<50	<0.5	<0.5	<0.5	<0.5	NS	NS
	03/26/96	<50	<0.5	<0.5	<0.5	<0.5	NS	NS
	05/18/96	<50	<0.5	<0.5	<0.5	<0.5	7.4	NS
	09/26/96	<50	<0.5	<0.5	<0.5	<0.5	8.7	NS
	12/06/96	<50	<0.5	<0.5	<0.5	<0.5	7.1	NS
	03/26/97	<50	<0.5	<0.5	<0.5	<0.5	12	NS
	06/30/97	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	09/04/97	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	12/29/97	1,800	130	<0.5	240	22	71	NS
	03/28/98	<50	<0.5	<0.5	<0.5	<0.5	3.8	NS
	06/11/98	<50	<0.5	<0.5	<0.5	<0.5	0.52	ND
	08/27/98	<50	<0.5	<0.5	<0.5	<0.5	0.56	ND
	12/04/98	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	03/03/99	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	05/18/99	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	08/18/99	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	11/02/99	<50	<0.5	<0.5	<0.5	<0.5	1.4	3 ^b
	02/02/00	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	02/22/00	<50	<0.5	<0.5	<0.5	<0.5	2.6	ND
	05/11/00	<50	<0.5	<0.5	<0.5	<0.5	2.5	4.9 ^b
	08/16/01	<50	<0.5	<0.5	<0.5	<0.5	<5	1.6 ^b
	10/15/01	<50	<0.5	<0.5	<0.5	<0.5	0.75	1.2 ^b
	05/02/02	<50	<0.5	<0.5	<0.5	<0.5	<0.5	0.58 ^b
	01/21/03	<50	<0.5	<0.5	<0.5	<0.5	<0.5	ND
MW-5	02/23/90	2,100	730	<0.5	<0.5	130	NS	NS
	03/12/90	380	440	<0.5	<0.5	2.5	NS	NS
	04/30/90	940	80	<0.5	<0.5	2.5	NS	NS
	12/17/93	870	10	<0.5	<0.5	7.5	NS	NS
	03/14/94	1,200	9.3	<0.5	<0.5	11	NS	NS
	06/16/94	1,600	5.1	<1.3	<1.3	<1.3	NS	NS
	08/30/94	1,500	5.3	<0.5	<0.5	<0.5	NS	NS
	11/04/94	2,600	6.7	<1.3	<1.3	<1.3	NS	NS
	01/20/95	1,100	4	<1.3	<1.3	<1.3	NS	NS
	06/13/95	<50	0.72	0.76	<0.5	1.5	NS	NS
	09/28/95	<50	<0.5	<0.5	<0.5	<0.5	NS	NS
	12/30/95	<50	<0.5	<0.5	<0.5	<0.5	NS	NS
	03/26/96	<50	<0.5	<0.5	<0.5	<0.5	NS	NS
	05/18/96	<50	<0.5	<0.5	<0.5	<0.5	25	NS
	09/26/96	66	<0.5	<0.5	<0.5	<0.5	73	NS
	12/06/96	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	03/26/97	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	06/30/97	<50	<0.5	<0.5	<0.5	<0.5	87	NS

TABLE F-1 (cont.)

Well No.	Date Sampled	Concentration (ug/l)						
		TPHg	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	Other Fuel Oxygenates
MW-5 (cont.)	09/04/97	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	12/29/97	<50	<0.5	<0.5	<0.5	<0.5	13	NS
	03/28/98	<50	<0.5	<0.5	<0.5	<0.5	1.3	NS
	06/11/98	<50	<0.5	<0.5	<0.5	<0.5	1.7	ND
	08/27/98	<50	<0.5	<0.5	<0.5	<0.5	1.3	ND
	12/04/98	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	03/03/99	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	05/18/99	62	<0.5	<0.5	<0.5	<0.5	40	NS
	08/18/99	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	11/02/99	<50	<0.5	<0.5	<0.5	<0.5	<0.5	ND
	02/02/00	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	02/22/00	<50	<0.5	<0.5	<0.5	<0.5	<0.5	ND
	05/11/00	<50	<0.5	<0.5	<0.5	<0.5	9.3	11 ^b
	09/05/00	<50	<0.5	<0.5	<0.5	<0.5	<5	ND
	10/27/00	<50	<0.5	<0.5	<0.5	<0.5	3.7	6.9 ^b
	01/23/01	<50	<0.5	<0.5	<0.5	<0.5	8.8	9.8 ^b
	04/17/01	<50	<0.5	<0.5	<0.5	<0.5	6.6	7.1 ^b
	08/16/01	<50	<0.5	<0.5	<0.5	<0.5	3.6	11 ^b
	10/15/01	<50	<0.5	<0.5	<0.5	<0.5	5.9	9.5 ^b
	05/02/02	<50	<0.5	<0.5	<0.5	<0.5	1.5	1.1 ^b
	06/13/02	<50	<0.5	<0.5	<0.5	<0.5	2.6	6.7 ^b
	01/21/03	<50	<0.5	<0.5	<0.5	<0.5	2.5	7.7 ^b
MW-6	02/23/90	1,600	110	1.8	0.8	260	NS	NS
	03/12/90	5,400	810	910	5.6	400	NS	NS
	04/30/90	19,000	3,400	570	150	1,000	NS	NS
	12/17/93	71	<0.5	<0.5	<0.5	<0.5	NS	NS
	03/14/94	<50	<0.5	<0.5	<0.5	<0.5	NS	NS
	06/16/94	<50	<0.5	<0.5	<0.5	<0.5	NS	NS
	08/30/94	<50	<0.5	<0.5	<0.5	<0.5	NS	NS
	11/04/94	<50	<0.5	<0.5	<0.5	<0.5	NS	NS
	01/20/95	<50	<0.5	<0.5	<0.5	<0.5	NS	NS
	06/13/95	860	11	16	2.2	110	NS	NS
	09/28/95	6,300	310	360	200	940	NS	NS
	12/30/95	210	0.63	<0.5	<0.5	<0.5	NS	NS
	03/26/96	170	0.93	0.54	0.78	1.7	NS	NS
	05/18/96	850	59	13	19	57	58	NS
	09/26/96	580	36	4.2	7.3	31	38	NS
	12/06/96	570	29	2.3	2.6	14	44	NS
	03/26/97	3,800	370	330	130	690	89	NS
	06/30/97	9,400	540	400	330	1,500	72	NS
	09/04/97	6,900	400	300	320	1,200	71	NS
	12/29/97	<50	0.64	0.56	<0.5	2.2	9.7	NS
	03/28/98	9,200	28	18	290	970	27	NS
	06/11/98	24,000	71	230	720	2,700	47	0.5 ^a ,25 ^c
	08/27/98	17,000	200	410	640	2,400	50	0.8 ^a ,59 ^c ,110 ^d
	12/04/98	25,000	160	520	880	3,400	<100	NS
	03/03/99	15,000	140	480	840	3,200	<100	NS
	05/18/99	4,800	25	60	140	490	<100	NS
	08/18/99	<50	<0.5	<0.5	<0.5	<0.5	18	NS
	11/02/99	63	<0.5	<0.5	<0.5	<0.5	18	10 ^c ,2 ^b
	11/02/99	77	<0.5	<0.5	<0.5	<0.5	19	11 ^c
	02/02/00	<50	1.2	<0.5	<0.5	<0.5	11	NS
	02/22/00	84	3.1	<0.5	<0.5	<0.5	29	12 ^c
	05/11/00	<50	<0.5	<0.5	<0.5	0.73	19	5.1 ^c ,1.9 ^b
	09/05/00	<50	<0.5	<0.5	<0.5	<0.5	12	1.4 ^b
	10/27/00	<50	<0.5	<0.5	<0.5	<0.5	26	8.5 ^c ,2.6 ^b

TABLE F-1 (cont.)

Well No.	Date Sampled	Concentration (ug/l)						
		TPHg	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	Other Fuel Oxygenates
MW-6 (cont.)	01/23/01	100	0.63	<0.5	<0.5	<0.5	18	2 ^b
	04/17/01	100	<0.5	<0.5	<0.5	<0.5	20	8.1 ^c ,2.1 ^b
	08/16/01	81	<0.5	<0.5	<0.5	<0.5	15	6 ^c ,2.1 ^b
	10/15/01	54	<0.5	<0.5	<0.5	<0.5	16	1.6 ^b
	05/02/02	100	0.51	<0.5	<0.5	<0.5	13	5.3 ^c ,1.9 ^b
	06/13/02	120	0.66	<0.5	<0.5	<0.5	11	1.5 ^b
	01/21/03	<50	<0.5	<0.5	<0.5	<0.5	3	ND
MW-7	05/22/90	<50	<0.5	<0.5	<0.5	<0.5	NS	NS
	12/17/93	<50	<0.5	<0.5	<0.5	<0.5	NS	NS
	03/14/94	<50	<0.5	<0.5	<0.5	<0.5	NS	NS
	06/16/94	<50	<0.5	<0.5	<0.5	<0.5	NS	NS
	08/30/94	<50	<0.5	<0.5	<0.5	<0.5	NS	NS
	11/04/94	<50	<0.5	<0.5	<0.5	<0.5	NS	NS
	01/20/95	<50	<0.5	<0.5	<0.5	<0.5	NS	NS
	06/13/95	<50	<0.5	<0.5	<0.5	<0.5	NS	NS
	09/28/95	<50	<0.5	<0.5	<0.5	<0.5	NS	NS
	12/30/95	<50	<0.5	<0.5	<0.5	<0.5	NS	NS
	03/26/96	<50	<0.5	<0.5	<0.5	<0.5	NS	NS
	05/18/96	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	09/26/96	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	12/06/96	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	03/26/97	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	06/30/97	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	09/04/97	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	12/29/97	<51	<0.5	<0.5	<0.5	<0.5	<5	NS
	03/28/98	<50	<0.5	<0.5	0.71	2.8	<0.5	NS
	06/11/98	<50	<0.5	<0.5	<0.5	<0.5	<0.5	ND
	08/27/98	<50	<0.5	<0.5	<0.5	<0.5	<0.5	ND
	12/04/98	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	03/03/99	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	05/18/99	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	08/18/99	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	11/02/99	<50	<0.5	<0.5	<0.5	<0.5	<0.5	ND
	02/02/00	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	02/22/00	<50	<0.5	<0.5	<0.5	<0.5	<0.5	ND
	05/11/00	<50	<0.5	<0.5	<0.5	<0.5	<0.5	ND
	08/16/01	<50	<0.5	<0.5	<0.5	<0.5	<0.5	ND
	10/15/01	<50	<0.5	<0.5	<0.5	<0.5	<0.5	ND
	05/02/02	<50	<0.5	<0.5	<0.5	<0.5	1.5	ND
	01/21/03	<50	<0.5	<0.5	<0.5	<0.5	2.5	0.63 ^b
MW-8	05/22/90	79	1.1	<0.5	<0.5	<0.5	NS	NS
	12/17/93	150	<0.5	<0.5	<0.5	<0.5	NS	NS
	03/14/94	<50	<0.5	<0.5	<0.5	<0.5	NS	NS
	06/16/94	74	<0.5	<0.5	<0.5	<0.5	NS	NS
	08/30/94	<50	<0.5	<0.5	<0.5	<0.5	NS	NS
	11/04/94	<50	<0.5	<0.5	<0.5	<0.5	NS	NS
	01/20/95	<50	<0.5	<0.5	<0.5	<0.5	NS	NS
	06/13/95	<50	<0.5	<0.5	<0.5	<0.5	NS	NS
	09/28/95	<50	<0.5	<0.5	<0.5	<0.5	NS	NS
	12/30/95	<50	<0.5	<0.5	<0.5	<0.5	NS	NS
	03/26/96	<50	<0.5	<0.5	<0.5	<0.5	NS	NS
	05/18/96	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	09/26/96	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	12/06/96	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	03/26/97	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	06/30/97	<50	<0.5	<0.5	<0.5	<0.5	<5	NS

TABLE F-1 (cont.)

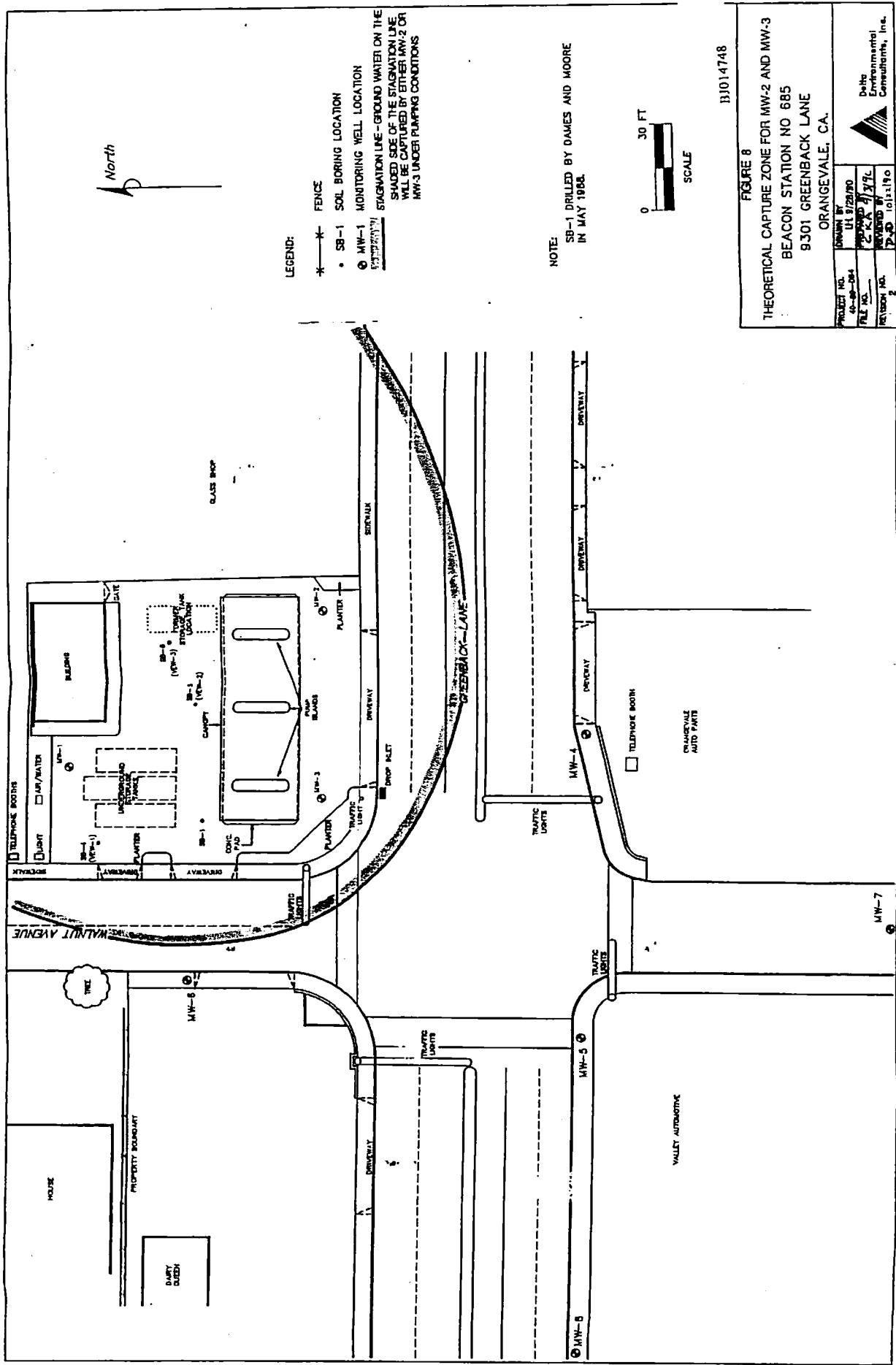
Well No.	Date Sampled	Concentration (ug/l)						
		TPHg	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	Other Fuel Oxygenates
MW-8 (cont.)	09/04/97	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	12/29/97	<51	<0.5	<0.5	<0.5	<0.5	<5	NS
	03/28/98	<50	<0.5	<0.5	<0.5	<0.5	1.1	NS
	06/11/98	<50	<0.5	<0.5	<0.5	<0.5	1.6	ND
	08/27/98	<50	<0.5	<0.5	<0.5	<0.5	1.4	ND
	12/04/98	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	03/03/99	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	05/18/99	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	08/18/99	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	11/02/99	<50	<0.5	<0.5	<0.5	<0.5	1.1	ND
	02/02/00	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	02/22/00	<50	<0.5	<0.5	<0.5	<0.5	<5	ND
	05/11/00	<50	<0.5	<0.5	<0.5	<0.5	0.73	ND
	08/16/01	<50	<0.5	<0.5	<0.5	<0.5	<0.5	ND
	10/15/01	<50	<0.5	<0.5	<0.5	<0.5	<0.5	ND
	05/02/02	<50	<0.5	<0.5	<0.5	<0.5	<0.5	ND
	01/21/03	<50	<0.5	<0.5	<0.5	<0.5	<0.5	ND
MW-9	05/18/99	<50	<0.5	<0.5	<0.5	<0.5	<5	ND
	08/18/99	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	11/02/99	<50	<0.5	<0.5	<0.5	<0.5	1.5	ND
	02/02/00	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	02/22/00	<50	<0.5	<0.5	<0.5	<0.5	<0.5	ND
	05/11/00	<50	<0.5	<0.5	<0.5	<0.5	1.2	ND
	09/05/00	<50	<0.5	<0.5	<0.5	<0.5	<5	ND
	10/27/00	<50	<0.5	<0.5	<0.5	<0.5	<0.5	110 ^d
	01/23/01	<50	<0.5	<0.5	<0.5	<0.5	<0.5	ND
	04/17/01	<50	<0.5	<0.5	<0.5	<0.5	<0.5	ND
	08/16/01	<50	<0.5	<0.5	<0.5	<0.5	<0.5	ND
	10/15/01	<50	<0.5	<0.5	<0.5	<0.5	<0.5	ND
	05/02/02	<50	<0.5	<0.5	<0.5	<0.5	<0.5	ND
	06/13/02	<50	<0.5	<0.5	<0.5	<0.5	<0.5	ND
	01/21/03	<50	<0.5	<0.5	<0.5	<0.5	<0.5	ND
MW-10	05/18/99	<50	<0.5	<0.5	<0.5	<0.5	<5	ND
	08/18/99	<50	<0.5	<0.5	<0.5	<0.5	<5	NS
	11/02/99	<50	<0.5	<0.5	<0.5	<0.5	<0.5	ND
	02/02/00	51	<0.5	<0.5	<0.5	<0.5	<5	NS
	02/22/00	<50	<0.5	<0.5	<0.5	<0.5	<0.5	ND
	05/11/00	<50	<0.5	<0.5	<0.5	<0.5	<0.5	ND
	09/05/00	<50	<0.5	<0.5	<0.5	<0.5	<5	ND
	10/27/00	<50	<0.5	<0.5	<0.5	<0.5	<0.5	ND
	01/23/01	<50	<0.5	<0.5	<0.5	<0.5	<0.5	ND
	04/17/01	<50	<0.5	<0.5	<0.5	<0.5	<0.5	ND
	08/16/01	<50	<0.5	<0.5	<0.5	<0.5	<0.5	ND
	10/15/01	<50	<0.5	<0.5	<0.5	<0.5	<0.5	ND
	05/02/02	<50	<0.5	<0.5	<0.5	<0.5	<0.5	ND
	06/13/02	<50	<0.5	<0.5	<0.5	<0.5	<0.5	ND
	01/21/03	<50	<0.5	<0.5	<0.5	<0.5	<0.5	ND

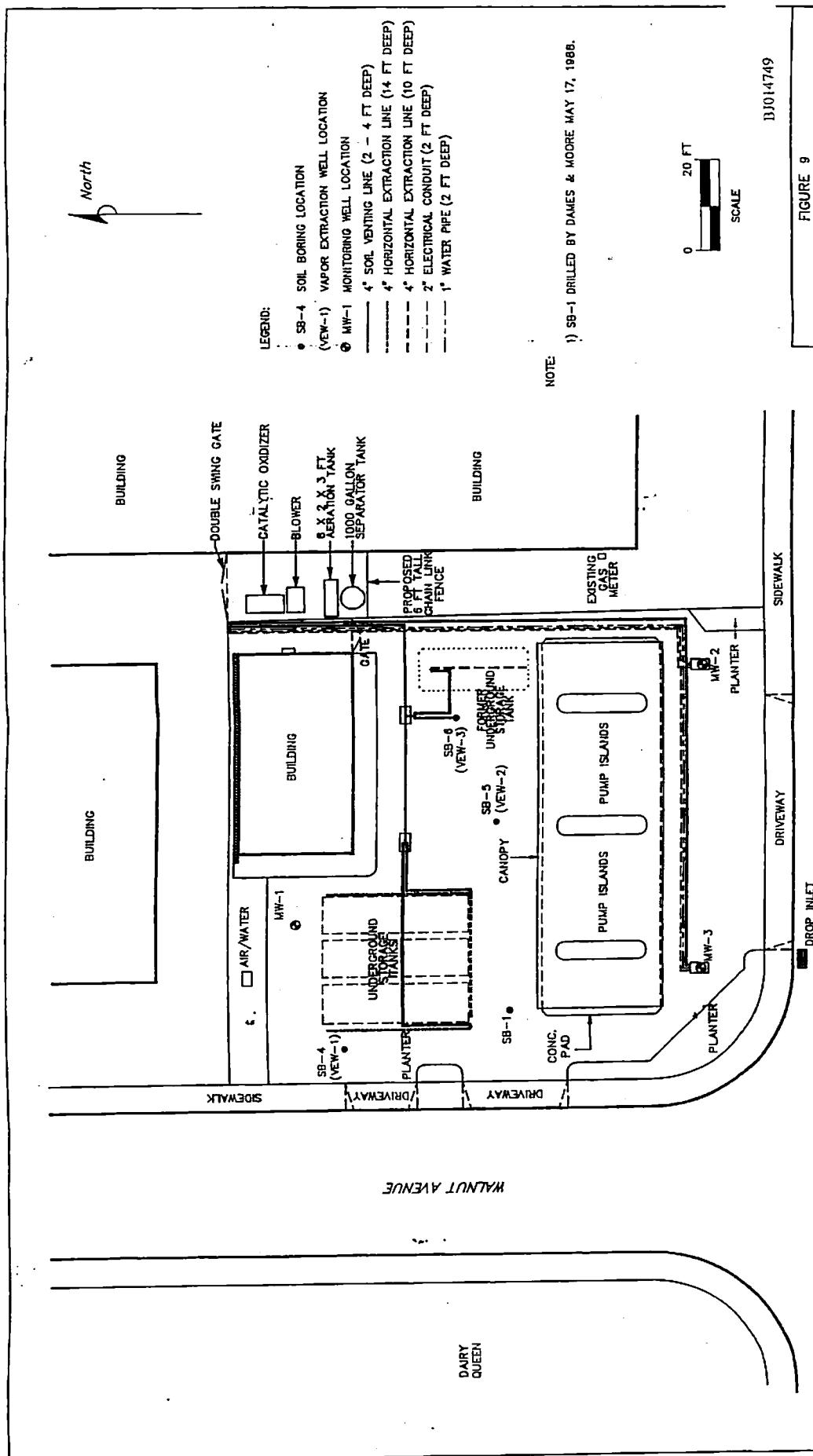
Notes:

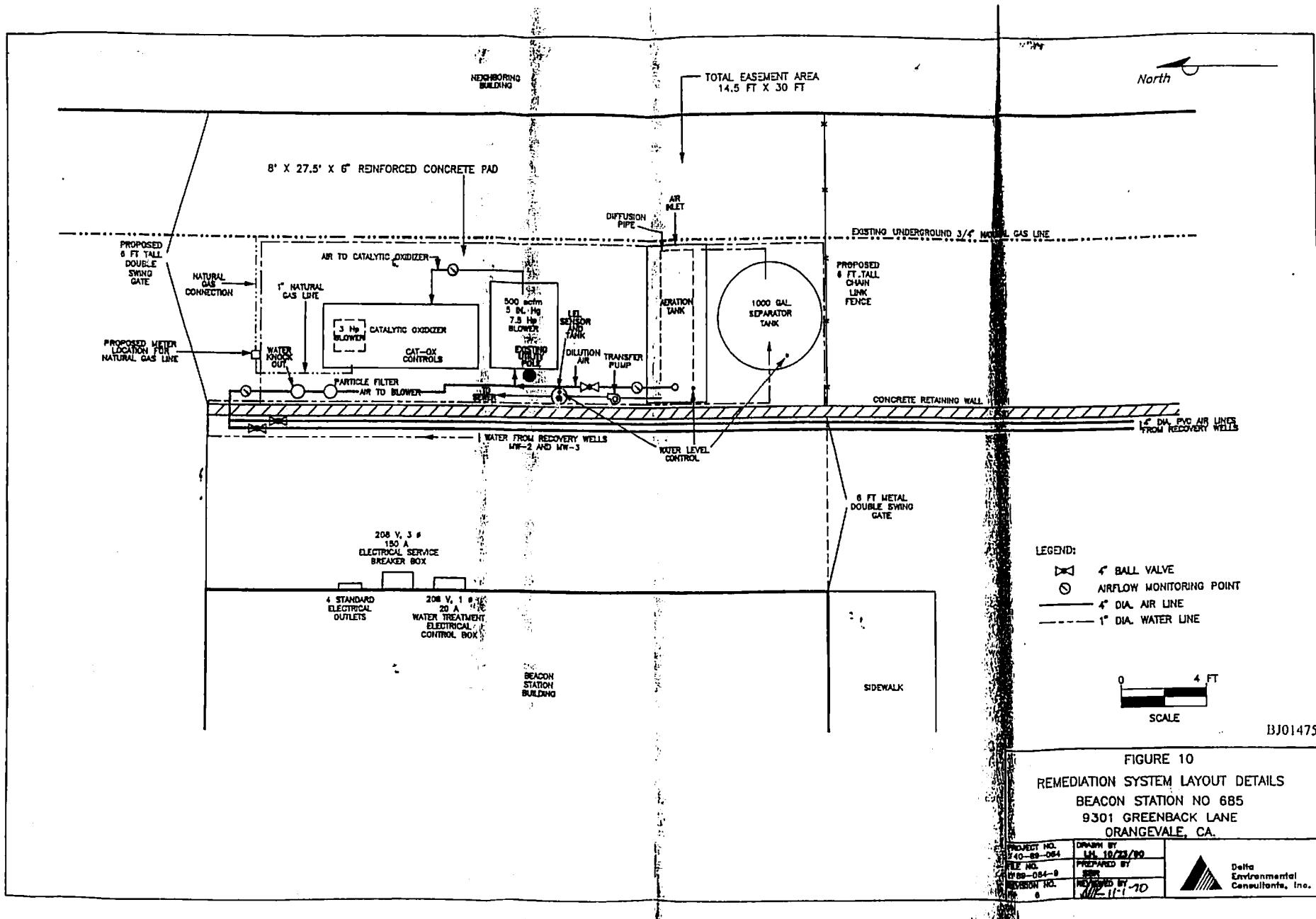
TPHg	= Total Petroleum Hydrocarbons as Gasoline	ND	= Not detected
MTBE	= Methyl tertiary butyl ether	NS	= Not sampled
Oxygenates	= TBA, DIPE, ETBE, TAME		
TBA	= Tert-butanol	a	= DIPE
DIPE	= Diisopropyl ether	b	= 1,2-dichloroethane
ETBE	= Ethyl-t-butyl ether	c	= TBA
TAME	= Tert-amyl methyl ether	d	= Methanol

APPENDIX G

REMEDIAL SYSTEM DIAGRAMS
(DELTA, 1995)







APPENDIX H

**RWQCB-SAN FRANCISCO BAY REGION
SUMMARY OF ENVIRONMENTAL SCREENING LEVEL
PHYSIO-CHEMICAL AND TOXICITY CONSTANTS
(RWQCB, 2003)**

Soil Type	SCS Soil Type	Soil Parameters			Rainfall Parameters			Runoff Parameters		
		K _s (cm/h)	N (inches)	M (inches)	R _s (inches/h)	R _g (inches/h)	Q _r (inches/h)	Q _m (inches/h)	Min. Gain Diamter (in.)	Q _g (inches/h)
C	C	0.61	0.610	1.253	0.2019	0.459	0.008	0.0002	0.016	0.0008
C	CL	0.34	0.610	1.416	0.2036	0.442	0.070	0.0008	0.02	0.0008
C	CL	0.60	0.611	1.472	0.3207	0.389	0.100	0.0008	0.04	0.0008
S	SC	0.38	0.636	1.740	0.4271	0.30	0.149	0.0008	0.044	0.0008
S	SC	26.75	0.632	2.177	0.6652	0.275	0.053	0.0008	0.025	0.0008
S	SC	0.47	0.634	1.208	0.1722	0.185	0.117	0.0008	0.030	0.0008
S	SC	0.55	0.621	1.33	0.2461	0.184	0.053	0.0008	0.0040	0.0008
S	SI	1.82	0.6068	1.679	0.4044	0.489	0.05	0.0008	0.039	0.0008
S	SI	0.40	0.6162	1.321	0.243	0.181	0.111	0.0008	0.0056	0.0008
S	SICL	0.40	0.6084	1.521	0.3425	0.482	0.05	0.0008	0.011	0.0008
S	SICL	0.70	0.6081	1.063	0.3087	0.430	0.006	0.0008	0.030	0.0008
S	SICL	1.00	0.6207	1.440	0.3000	0.387	0.030	0.0008	0.03	0.0008

Chemical Properties- Liquid Fuels														
CAS No.	Chemical	Oxidative carbon partition coefficient, K_{ox} (log ₁₀)			Henry's law constant at reference temperature, H (atm·mol/m ³)			Henry's law constant at reference temperature, H (atm·mol/m ³)			Henry's law constant information, T_{h} (°C)	Henry's law constant information, T_{h} (°C)		
		Pure component water solubility, S (mg/L)	Dissolvability in water, D _w (cm ³ /s)	Inert, D _i (cm ³ /s)	Henry's law constant, H ^a	Inert, H ^a	Henry's law constant, H ^b	Henry's law constant, H ^a	Inert, H ^a	Henry's law constant, H ^b				
502395 Carbon tetrachloride		1.74E+02	7.80E-02	8.80E-06	1.25E+00	7.93E+02	3.04E+02	25	340.00	658.00	7.127	4.2E+06	2.5E+03	153.82
67641 Acetone		5.7E+01	1.24E+01	1.14E+05	1.06E+01	1.59E+03	3.88E+05	25	329.20	508.10	6.955	0.0E+00	3.5E+02	59.08
70361 Chloroform		3.9E+01	1.04E+01	1.00E+05	6.70E+01	7.02E+03	3.07E+03	25	343.32	536.40	6.988	5.0E+00	3.0E+02	119.35
71432 Benzene		5.9E+01	1.17E+01	9.0E+05	2.20E+01	1.78E+03	5.05E+03	25	351.24	602.16	7.342	2.0E+06	6.0E+03	76.11
72030 Alkyl branched (butanomethane)		1.10E+02	7.80E+02	8.00E+05	1.32E+03	7.06E+03	1.72E+02	25	347.24	645.00	7.130	0.0E+00	2.2E+02	131.43
72030 Alkyl branched (butanomethane)		0.9E+00	1.20E+01	1.10E+05	1.50E+04	6.74E+03	6.74E+03	25	276.71	447.00	5.714	0.0E+00	4.0E+02	94.94
74073 Chloroform		3.0E+01	1.10E+01	6.0E+05	1.20E+03	9.40E+03	2.40E+02	25	241.04	411.80	5.147	1.0E+00	5.1E+01	51.00
75001 Choranthrene		1.4E+01	1.04E+01	1.18E+05	7.00E+03	4.81E+03	1.10E+02	25	276.00	400.00	5.012	0.3E+01	1.0E+01	61.00
75014 Vinyl chloride (chloroethene)		1.8E+01	1.06E+01	1.20E+05	2.78E+03	1.11E+03	2.70E+02	25	239.25	432.00	5.720	7.0E+05	0.0E+00	87.50
75092 Methylene chloridene		1.1E+01	1.01E+01	1.17E+05	1.32E+04	6.01E+03	1.19E+03	25	313.03	610.00	6.008	1.0E+06	3.0E+02	84.93
75092 Branched chloromethane		5.0E+01	2.0E+02	6.0E+05	1.06E+03	6.06E+03	1.06E+03	25	305.15	616.45	7.000	3.7E+06	1.0E+02	103.63
75354 1,1-Dichloroethene		3.1E+01	7.42E+02	1.08E+05	5.06E+03	2.30E+01	5.02E+03	26	6.00E+06	6.00E+06	1.61E+00	6.0E+01	6.0E+01	96.00
76075 1,2-Dichloroethene		5.0E+01	7.02E+02	1.04E+05	2.0E+03	1.02E+02	2.0E+02	25	304.76	523.00	6.247	0.0E+00	2.0E+01	96.04
76033 Methyl vinyl ketone		4.6E+01	7.02E+02	8.00E+05	1.06E+03	2.74E+03	2.74E+03	26	369.62	572.00	7.500	1.0E+06	1.0E+01	112.00
76005 1,2-Dichloroethane		5.0E+01	7.02E+02	8.00E+05	4.42E+03	3.74E+02	1.03E+04	26	369.16	602.00	6.322	1.0E+05	3.5E+02	133.41
76016 Trichloroethane		1.6E+02	7.00E+02	7.00E+05	4.22E+03	1.10E+03	4.22E+03	25	360.30	544.00	7.305	2.0E+06	3.5E+02	131.30
76345 1,1,2-Trichloroethane		4.3E+01	7.10E+02	7.00E+05	2.97E+03	3.45E+04	2.97E+03	25	419.60	661.15	5.86E+05	5.8E+05	2.1E+01	167.85
83329 Acenaphthene		4.0E+03	4.21E+01	7.00E+05	4.20E+03	6.00E+03	1.65E+04	26	610.54	12.155	12.155	0.0E+00	2.1E+01	154.21
66237 Fluorene		1.3E+04	7.00E+05	7.00E+05	1.00E+03	3.10E+13	7.00E+05	25	507.44	670.00	12.006	0.0E+00	1.4E+01	106.22
90123 1,2,4-Methylenepentane		7.2E+02	5.00E+02	5.00E+05	2.00E+01	1.00E+02	2.00E+01	25	227.00	322.00	11.190	0.0E+00	1.4E+01	147.00
90123 1,2,4-Methylenepentane		1.1E+03	7.3E+02	7.00E+05	1.00E+01	1.00E+01	1.00E+01	25	401.14	748.40	10.273	0.0E+00	3.0E+01	126.18
95501 1,2-Dichlorobenzene		6.1E+02	7.00E+02	7.00E+05	1.00E+01	1.00E+01	1.00E+01	25	461.57	705.00	6.020	0.0E+00	1.0E+01	147.00
95578 2-Chlorophenol		3.9E+02	5.01E+02	5.01E+05	1.00E+01	1.00E+01	1.00E+01	25	447.53	602.00	6.972	0.0E+00	1.0E+01	126.56
100414 Ethylbenzene		9.0E+01	7.00E+02	7.00E+05	2.91E+02	7.00E+03	2.91E+04	25	526.16	767.13	13.000	0.0E+00	3.5E+01	107.45
100883 Xyline		3.0E+02	7.00E+02	7.00E+05	1.00E+02	3.23E+03	7.00E+03	25	408.34	617.20	6.501	1.0E+06	1.0E+00	106.17
105675 Styrene		4.0E+02	7.00E+02	7.00E+05	1.00E+02	1.13E+03	7.00E+03	25	610.00	730.00	11.737	1.0E+00	1.0E+01	104.15
105675 2,4-Dimethylphenol		4.0E+02	5.84E+02	6.00E+05	2.00E+01	1.00E+02	1.70E+05	25	484.13	630.00	11.320	0.0E+00	1.0E+01	127.17
106024 1,2-Dibromoethane		6.0E+02	7.00E+02	7.00E+05	1.00E+01	1.00E+01	1.00E+01	25	434.03	648.75	6.021	1.0E+05	0.0E+00	147.00
106024 1,2-Dibromoethane		2.0E+01	7.3E+02	3.00E+05	1.51E+01	4.82E+04	3.00E+04	25	404.00	662.00	6.080	7.1E+05	0.0E+04	188.00
107023 1,2-Dibromoethane		1.7E+01	1.04E+01	9.00E+00	8.50E+03	4.01E+02	7.00E+04	25	350.65	681.00	7.043	2.1E+05	4.9E+03	91.06
108103 Xylyl Isopropyl Ketone		1.3E+02	7.00E+02	7.00E+05	1.00E+04	1.40E+04	1.40E+04	25	389.00	575.00	40.610	0.0E+00	9.1E+02	100.00
108893 Chlorobenzene		4.0E+02	7.00E+02	7.00E+05	1.00E+02	3.01E+03	7.00E+03	25	412.27	642.27	6.523	0.0E+00	4.0E+01	92.14
109893 Chlorobenzene		2.10E+02	7.00E+02	7.00E+05	6.21E+02	2.72E+01	6.01E+03	25	404.67	632.40	6.010	0.0E+00	6.0E+02	112.50
111203 Bis(2-chloroethyl)ether		7.00E+01	7.53E+02	7.53E+02	1.72E+04	7.38E+04	0.0E+02	25	431.15	655.00	7.154	-0.0E+00	143.11	X
120127 Anthracene		2.3E+01	7.00E+02	3.00E+05	3.40E+02	2.07E+01	3.40E+02	25	415.18	673.00	13.121	0.0E+00	1.1E+01	118.24
120221 1,2,4-Tribromobutane		1.0E+02	7.00E+02	7.00E+05	1.00E+02	1.00E+02	1.00E+02	25	401.15	726.00	6.000	0.0E+00	1.0E+01	101.45
124481 Dibromochloromethane		4.0E+01	9.00E+02	9.00E+05	4.40E+03	3.49E+02	5.00E+04	25	404.40	620.20	6.288	5.0E+00	5.0E+02	209.26
127184 Tetrachloroethylene		1.3E+02	7.00E+02	7.00E+05	7.00E+02	2.72E+02	7.00E+02	25	407.95	634.00	14.370	0.0E+00	1.0E+01	105.03
128000 Pyrene		1.0E+02	7.00E+02	7.00E+05	1.00E+02	1.30E+03	1.00E+02	25	607.95	636.00	14.370	0.0E+00	1.0E+01	102.26
156592 1,2-Dichloroethylene		5.2E+01	7.00E+02	7.00E+05	3.13E+05	3.50E+03	4.00E+03	25	333.65	544.00	7.192	0.0E+00	3.6E+02	100.04
156592 1,2-Dichloroethylene		5.2E+01	7.00E+02	7.00E+05	3.05E+03	3.05E+03	3.05E+03	25	20.85	61.50	6.717	0.0E+00	7.0E+02	110.97
156592 1,2-Dichloroethylene		4.6E+01	8.20E+02	1.00E+05	3.00E+03	3.00E+03	3.00E+03	25	25.00	67.50	7.000	1.0E+05	2.0E+02	100.00
156592 1,2-Dichloroethylene		4.0E+01	8.00E+02	1.00E+05	3.00E+03	3.00E+03	3.00E+03	25	25.00	67.50	7.000	2.0E+02	2.0E+02	100.00
156592 1,2-Dichloroethylene		3.0E+01	8.00E+02	1.00E+05	3.00E+03	3.00E+03	3.00E+03	25	25.00	67.50	7.000	2.0E+02	2.0E+02	100.00
156592 1,2-Dichloroethylene		2.0E+01	8.00E+02	1.00E+05	3.00E+03	3.00E+03	3.00E+03	25	25.00	67.50	7.000	2.0E+02	2.0E+02	100.00
156592 1,2-Dichloroethylene		1.0E+01	8.00E+02	1.00E+05	3.00E+03	3.00E+03	3.00E+03	25	25.00	67.50	7.000	2.0E+02	2.0E+02	100.00
156592 1,2-Dichloroethylene		0.0E+00	8.00E+02	1.00E+05	3.00E+03	3.00E+03	3.00E+03	25	25.00	67.50	7.000	2.0E+02	2.0E+02	100.00

Vol. 11

IRI 1 from Goff PA if available; California Environmental Protection Agency, Office of Environmental Health Hazard Assessment.

Additional RIC information from RID-institution in for presentation in USEPA Region IX Pollution Prevention Roundtable, March 2002. Document #14. Preliminary Results from USEPA Region IX Pollution Prevention Roundtable, March 2002. Document #15.

Additional physico-chemical constants from NIST 2001.

1122 | JOURNAL OF CLIMATE